

Exploring the Environmental Effectiveness of Extended Producer Responsibility Programmes

An analysis of approaches to collective and individual responsibility
for WEEE management in Sweden and the UK

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Abstract

The purpose of this work is to enhance the understanding of how different approaches regarding the implementation of EPR programmes may contribute to environmental improvements. In order to meet this purpose, the following research question is explored: *How may different approaches to collective and individual producer responsibility, implemented and/or envisioned by stakeholders, contribute to the achievement of the environmental objectives of EPR programmes?*

This study explores how EPR programmes for WEEE are implemented in Sweden and the UK, and how different stakeholders approach collective and individual producer responsibility. It includes the Swedish EPR programme implemented in 2001 and the ongoing implementation of the WEEE directive in the UK. Data collection is mainly based on interviews with selected stakeholders in Sweden and the UK.

The results of the study show that there is limited focus on prevention and stimulation of eco-design in both Sweden and the UK. This may be related to the uncertainties in how to implement individual responsibility in practice. Collective responsibility seems to have a larger focus due to its potential for achieving the objectives of increased recycling and reduced disposal.

Executive Summary

In Europe, there is a rapidly increasing amount of *Waste from Electrical and Electronic Equipment (WEEE)*, constituting an environmental problem. A new EU directive for WEEE management entered into force in early 2003. Due to this directive, there is an increasing need to get a better understanding of the implementation of EPR programmes. One issue, which has been widely discussed among stakeholders, is whether producers should take their responsibility individually or collectively.

The purpose of this study is to enhance the understanding on how different approaches regarding the implementation of *Extended Producer Responsibility (EPR)* programmes, especially to collective and individual producer responsibility, may contribute to environmental improvements. In order to meet the purpose, the following research question is explored in this study: *How may different approaches to collective and individual producer responsibility, implemented and/or envisioned by stakeholders, contribute to the achievement of the environmental objectives of EPR programmes?*

The research is focused on exploring how EPR programmes for WEEE are implemented in Sweden and in the UK and how different stakeholders approach collective and individual producer responsibility. The study includes the existing Swedish EPR programme and the ongoing implementation of the WEEE directive in the UK. A total of 27 stakeholders in Sweden and the UK were selected for the study including representatives for authorities and governments, retailers and manufacturers within the EEE industry, third party service providers, the waste treatment industry and local authorities. Data collection is mainly based on interviews with stakeholders.

The framework used for analysing the collected data is based on the waste management hierarchy, the main objectives of EPR and the concepts of individual and collective producer responsibility. Among common policy evaluation criteria, environmental effectiveness is in focus in the discussion.

In Sweden, a legislative framework for WEEE management including an EPR ordinance has been in operation since 2001. The majority of the producers affected by the EPR obligations are members of a collective scheme, El-Kretsen, which has been organised to ensure compliance with the legislation. Until recently, there were only a few individual initiatives taken by producers, but from July 1 2003 the TV and radio industry is no longer member of El-Kretsen and is fulfilling its obligations on an individual basis.

In the UK, the new legislation based on the WEEE directive will be its first EPR programme for WEEE management. The government's approach is to involve the industry as much as possible in the implementation process. Soon after the directive entered into force, the government published a discussion document to get initial views of various stakeholders on how the directive should be transposed and implemented. The process is in its initial stage and there are still several issues that need to be further clarified before the actual implementation takes place.

The primary findings are categorised according to the objectives set for the two EPR programmes including prevention and incentives stimulating eco-design, increased reuse, recycling and recovery, reduced disposal and improved environmental performance of involved operators.

Regarding the Swedish programme, there seems to be limited focus on contribution to *waste prevention and stimulation of eco-design* in the existing systems, which are dominated by the

collective scheme run by El-Kretsen. The increasing interest for alternative solutions including individual responsibility, may however lead to better opportunities for preventative measures. The large focus seems to be on *recycling* and there is a potential for increased *reuse* of equipment but the current opportunities are limited due to the collection system of the local authorities. With regard to *reduction of disposal*, the collection system of El-Kretsen has achieved high collection rates and the local authorities seem to have a key role to assure high collection rates. Combinations of a variety of different collection methods may have the potential to contribute to increase overall collection rates. However, there is also a risk that an increased level of individual solutions may lead to lower collection rates. Regarding *improving the environmental performance of involved operators*, El-Kretsen may put pressure on involved operators to improve their performance in their facilities but the dependency of many recyclers on El-Kretsen may limit their capacity to make necessary investments to achieve this objective.

Since the details of the UK implementation not have been settled yet, there are still opportunities for stakeholders to consider approaches for how to best meet the environmental objectives. With regard to *prevention and stimulation of eco-design*, the individual responsibility supported by the WEEE directive may include potential to achieve this objective but it is still unknown how this will be organised in practice. *Reuse, recycling and recovery* all seem to be important in the UK. It may be easier to support reuse with individual solutions depending on the control level of the collection methods. Targets are set for recycling and recovery but it may be difficult to meet those targets due to limited recycling capacity. With regard to *reduction of disposal*, the main focus seems to be on setting up collective schemes, in order to assure high collection rates. The involvement of the local authorities seems to be key for achieving this objective. There is a risk that the requirements on the *environmental performance on involved operators* may be lowered due to limited recycling capacity. Individual agreements with the producers may better stimulate innovation instead of becoming dependent on one single collective scheme.

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1. Introduction

In this chapter the background of the thesis is presented followed by its purpose and objectives. The scope of the study is also described and an outline of the report is presented to facilitate for the reader to follow the structure.

1.1 Background

In Europe, the amount of *Waste from Electrical and Electronic Equipment* (hereafter referred to as *WEEE*) is expected to increase the coming years due to increased consumption as an effect of a rapid technological development. As much *Electrical and Electronic Equipment*¹ (*EEE*) contain hazardous substances, *WEEE* constitutes an important environmental problem when it is disposed either in landfill or incineration.

There is an increasing trend in European policy making to use different types of policy instruments, for instance economic instruments and regulations and standards, in the implementation of environmental policies to achieve environmental benefits. *Extended Producer Responsibility (EPR)* is a concept based on the polluter-pays-principle, where financial and/or physical obligations are put on the polluter, in this case the producer, and *EPR* programmes aim at giving incentives to producers to internalise externalities, such as negative impacts on the environment.

A new EU directive for *WEEE* management, the *WEEE* directive², which is based on the *EPR* concept, entered into force in early 2003. As this directive constitutes the basis for the future development of national *EPR* legislation for *WEEE* that must be implemented in all EU member countries by August 2004, there is an increasing need to get a better understanding of the implementation of *EPR* programmes and their expected effects among a range of affected stakeholders, especially the producers within the *EEE* industry. Some European countries already have implemented *EPR* programmes for *WEEE* management similar to what is outlined in the *WEEE* directive, and knowledge of the existing programmes is being shared among the member states to avoid common pitfalls. Still there seems to be much left to learn. Due to the complexity of existing *EPR* programmes, it is often difficult to rapidly get a complete understanding of the system and there are many issues that need further clarification.

An increasing demand for more knowledge of *EPR* systems is leading to an increased interest for research in the area. There is a specific interest in understanding how existing systems are working in practice in order to deal with concerns about the actual effects and overall outcome of the programmes.

¹ In the *WEEE* directive, electrical and electronic equipment or *EEE* includes equipment, which is dependent on electric currents or electromagnetic fields in order to work properly, and equipment for the generation, transfer and measurement of such currents and fields. The product categories, set out in annex IA, include large and small household appliances; IT and telecommunications equipment; consumer equipment; lighting equipment; electrical and electronic tools; toys, leisure and sports equipment; medical devices; monitoring and control equipments; automatic dispensers (Directive 2002/96/EC, Annex IA).

² The directive is sometimes used for the *WEEE* directive.

An issue, which has got many reactions during ongoing discussions among stakeholders, is whether producers should take their responsibility individually or collectively³. There seems to be a need for clarification on this issue not only because there are many different interpretations of the two approaches, but also because there are uncertainties about their actual effects in different contexts.

In Sweden, a legislative framework for WEEE management including an EPR ordinance has been in operation since 2001. Recently, the TV and radio industry decided to leave the collective scheme, which had been organised by the majority of the industry affected by the EPR obligations to ensure compliance, and to fulfil their obligations on an individual basis. This has led to an increased interest on the discussion about collective and individual EPR in Sweden.

In the UK, the new legislation based on the WEEE directive will be its first EPR programme for WEEE management. The government's approach is to involve the industry as much as possible in the implementation process. The consultation process started in the autumn 2002, when the government arranged a series of awareness seminars and soon after the directive entered into force, it published a discussion document to get initial views of various stakeholders on how the directive should be transposed and implemented. The process is in its initial stage and there are still several issues that need to be further clarified before the actual implementation takes place.

1.2 Purpose and research question

The purpose of this study is to enhance the understanding on how different approaches regarding the implementation of EPR programmes may contribute to environmental improvements.

In order to meet the purpose, the following research question is explored in this study:

- How may different approaches to collective and individual producer responsibility, implemented and/or envisioned by stakeholders, contribute to the achievement of the environmental objectives of EPR programmes?

1.3 Methodology

This section explains the methodology used for conducting the study.

During the research, the main focus has been on exploring two questions, which are related to the purpose and the main research question:

- How are EPR programmes for EEE implemented in Sweden and in the UK?
- How do different stakeholders approach collective and individual producer responsibility?

³ A producer has an *individual responsibility* when taking responsibility for the end-of-life management of its own products and producers have *collective responsibility* when producers of the same product group together fulfil their responsibility for end-of-life management of their products regardless of the brand (Tojo, 2003).

1.3.1 Selection of product group

The product group of EEE has been selected since there is an increasing interest within this area due to the new WEEE directive. Special interest is directed to *information and communication technologies (ICT)* since they constitute an increasingly important product group due to its rapid increase in waste streams. On the other hand, there is no specific product group within EEE that have been excluded in the study.

Both the WEEE directive and the *directive for restriction of the use of certain hazardous substances in electrical and electronic equipment (ROHS)*, are focusing on producer responsibility of EEE but since the focus of this study is on the implementation of take-back requirements, the ROHS directive is not further discussed.

1.3.2 Selection of countries

The focus is on WEEE management based on the current EPR programme in Sweden and the future EPR legislation in the UK. The programme in Sweden is selected because it represents a system, which has been in operation for two years and the stakeholders have gained experience from its development and may provide valuable information for an analysis. The UK represents a country with no earlier experience from EPR legislation for WEEE. However, the implementation of the WEEE directive is discussed and enough information is available to conduct an analysis of its implementation. The researcher's knowledge of Swedish and English languages as well as availability of information has also played a role in selecting the two countries.

Even though the WEEE directive is about to be implemented also in Sweden, only little information is available on the progress of the implementation. This process is still in its initial phase and discussions with stakeholders are about to take place. Therefore, focus has not been on this policy in the analysis of the Swedish context.

1.3.3 Selection of stakeholders

A number of stakeholders were selected in Sweden and the UK in order to study their approaches to the implementation of the EPR programmes. Due to the large number of involved stakeholders, it has not been possible to cover all in this study. The main selection criteria include the importance of their roles in the implementation process and their engagement in the ongoing discussions. A total of 20 interviews were conducted.

The stakeholders selected are presented in Table 1. Stakeholders that were not interviewed are in italic.

	Sweden	UK
Governments and authorities	<ul style="list-style-type: none"> ▪ Naturvårdsverket (the Swedish Environmental Protection Agency) 	<ul style="list-style-type: none"> ▪ Environment Agency ▪ Department of Trade and Industry
The EEE industry ⁴	<ul style="list-style-type: none"> ▪ IT-företagen ▪ Teknikföretagen ▪ MobilTeleBranschen (the Swedish Association for the Mobile Phone Industry) ▪ Dell ▪ Fujitsu Siemens ▪ Ikea ▪ Siba 	<ul style="list-style-type: none"> ▪ Intellect ▪ <i>British Retail Consortium</i> ▪ <i>European Recycling Platform</i>
Third party service providers	<ul style="list-style-type: none"> ▪ El-Kretsen ▪ Euroenvironment 	<ul style="list-style-type: none"> ▪ <i>Fonebak</i> ▪ <i>Transform</i>
Waste treatment industry	<ul style="list-style-type: none"> ▪ Återvinningsindustrierna (the Swedish Recycling Industries' Association) ▪ HA Industri ▪ Ragnsells Elektronikåtervinning 	<ul style="list-style-type: none"> ▪ <i>Industry Council for Electronic Equipment Recycling</i> ▪ UK Centre for Economic and Environmental Development ▪ Calyx group
Local authorities	<ul style="list-style-type: none"> ▪ Renhållningsverksföreningen (the Swedish Association of Waste Management) ▪ Renhållningsförvaltningen Stockholms Stad (the local authority waste management department in Stockholm) 	<ul style="list-style-type: none"> ▪ <i>Local Authority Recycling Advisory Committee</i> ▪ <i>Local Government Association</i>

Table 1 Overview of selected stakeholders

More extensive interviews were made in Sweden than in the UK due to the fact that the Swedish programme has been running for some time and the involved stakeholders in Sweden have gained own experience in the programme and have more information to share compared to the UK. In addition, with limitations in terms of available resources and flexibility for the practical interview arrangements, more stakeholder interviews were conducted in Sweden than in the UK.

Sweden

Among the Swedish authorities, the Environmental Protection Agency was selected as it has a central role in the whole implementation and development process of the EPR programme.

Within the EEE industry, IT-företagen was selected for representing the information technology (IT) industry. The EPA and IT-företagen recommended two other industry organisations, Teknikföretagen and MobilTeleBranschen, for having good knowledge of the situation. Two large computer manufacturers, Dell and Fujitsu Siemens, were selected

⁴ The industry stands for the EEE industry if no other is stated.

representing different business models and with different strategies for meeting its EPR obligations. Dell represents a large manufacturer within the IT industry with direct customer sales that has chosen to combine two solutions for fulfilling its EPR obligations. Fujitsu Siemens sells its products through partners such as retailers and distributors, and it has decided to meet its EPR obligations by joining one collective scheme. Among the retailers, Ikea and Siba were selected as representatives of two different EPR strategies, which have attracted much attention among the stakeholders. Ikea is one of few companies that decided not to participate in the industry collaboration from the beginning. Siba represents a large retailer in the TV and radio industry, which recently decided to leave the collaboration.

Among the service providers, El-Kretsen is the most important industry collaboration scheme and Euroenvironment offers an alternative to this scheme with focus on the IT industry.

Among the recyclers, Återvinningsindustrierna (ÅI) was selected as a representative for the recycling industry that is very active in the discussions. Ragnsells Elektronikåtervinning represents one of the largest recyclers for WEEE, which recently lost its contract with the major industry collaboration scheme. HA Industry, recommended by ÅI, represents a small recycling company taking collection services initiatives for WEEE.

Renhållningsverksföreningen (RVF), the Swedish association of waste management, represents the interests of the municipal waste management and has been active in the creation of the industry collaboration scheme. Renhållningsförvaltningen Stockholms Stad, the local authority waste management department in Stockholm, was selected to illustrate the approach of a local authority.

UK

On a governmental level in the UK, the Environment Agency and the Department of Trade and Industry have important roles in the implementation process.

Intellect representing the IT industry, is taking an active standpoint in the discussions. Also the British Retail Consortium, representing retailers, is active in the debate. The European Recycling Platform represents an initiative of a number of important manufacturers, which has got a lot of attention. Fonebak and Transform represent two initiatives developed to arrange services for EPR obligations.

The Industry Council for Electronic Equipment Recycling represents the recycling industry and the UK Centre for Economic and Environmental Development is involved in a project for evaluation of best practices regarding WEEE management. Also Calyx group has developed a concept on how to arrange WEEE take-back for their customers.

The Local Authority Recycling Advisory Committee and the Local Government Association are active in the discussions representing the local authorities.

1.3.4 Collection and analysis of data

The study is mainly based on primary data complemented with secondary data.

Primary data

The stakeholders' positions regarding collective and individual producer responsibility have been primarily identified through interviews in person. In order to interview some of the UK stakeholders in person, a few days were spent in London, which resulted in five stakeholder interviews. Some interviews have also been conducted over the phone. In one case, the respondent has answered the questions by e-mail. A common structure of questions has been used for the interviews, see Appendix 1 – Outline of interview questions, which has been extended with additional questions adapted to the role and interest of the specific stakeholder. Each interview has taken between 15 and 90 minutes. In order to add clarity to some questions, some of the interviews were followed up by telephone or e-mail.

In addition to questions directly related to collective and individual producer responsibility, the interview outline also had questions related to the surrounding context, important issues and future development, in order to get an overall understanding about how the systems may work in practice.

Secondary data

The information from the interviews has been complemented by information gained mainly from articles in daily press. This information has been used to add the views of some stakeholders not covered by the interviews and to clarify some issues. Since there is limited literature available on the implementation of the two studied EPR programmes, internet has been used as a main source to find up-to-date information on the implementation of the programmes and stakeholders' approaches.

Some of the stakeholders in the UK have not been possible to cover with interviews. Their positions are instead based on information found in articles.

The analysis of the environmental effectiveness, which is a common policy evaluation criterion, is based on the data collected about the stakeholder approaches. The environmental objectives are also reviewed with regard to the waste management hierarchy. The analysis includes a discussion about how the different stakeholders' approaches may contribute to the achievement of the environmental objectives. The framework used for the analysis is further presented in chapter 2.

1.4 Expected contribution

The main target group includes stakeholders involved in the current discussions about EPR programmes for WEEE in EU member countries, for instance the EEE industry, local authorities, waste treatment industry and service providers.

The contribution of this study is to provide additional perspectives and give insights to the ongoing discussion about the implementation of WEEE legislation. It may also help to explain the approaches of involved stakeholders and bring clarity to their interests.

1.5 Report outline

In this first introductory chapter, chapter 1, the background of the study is presented followed by the purpose and objectives of the research. The scope and limitations of the study as well as the methodology used are also described.

In chapter 2, the framework used for the analysis of data is presented. The chapter includes an explanation of the waste management hierarchy, which is a central element in environmental policy-making, a presentation of the main objectives of EPR and an introduction to the concepts of collective and individual producer responsibility. The policy evaluation criteria used for the analysis are described focusing on environmental effectiveness.

The findings from the study are presented in chapter 3. Here, the contexts of the EPR programmes in Sweden and the UK are described followed by presentations of different stakeholders' approaches to the implementation focusing on collective and individual producer responsibility based on the interviews and literature review. The findings from the stakeholder groups are summarised in the end of this chapter.

Chapter 4 contains a discussion about the environmental effectiveness of the stakeholders' approaches to collective and individual producer responsibility as compared to the stated environmental objectives of the EPR programmes. The structure follows the environmental objectives set for the programmes and a summary of the evaluation is presented in the end of the chapter.

The conclusions are presented in chapter 5 including a final discussion on the environmental effectiveness analysis of the studied programmes. Some recommendations are described to improve the environmental effectiveness and some areas for further research are also suggested.

2. Framework for environmental effectiveness analysis

In this chapter, the framework that is used for the analysis of data is presented. The chapter includes an explanation of the waste management hierarchy, a presentation of the main objectives of EPR and an introduction to the concepts of collective and individual producer responsibility. In addition, environmental effectiveness is also described as a policy evaluation criterion.

In order to conduct the analysis of data it is important to understand the waste management hierarchy, which is a central element in EU policy making. The hierarchy is later used to evaluate the objectives of the EPR programmes. It is also important to describe the primary objectives of EPR and what is meant by the concepts of collective and individual producer responsibility. Some common policy criteria are also explained, with focus on environmental effectiveness.

2.1 The waste management hierarchy

The amount of waste is becoming an increasing problem within the EU. Waste prevention and management has therefore been identified as one of the top priorities within the EU aiming for a significant reduction in the amount of waste generated, through new waste prevention initiatives, better use of resources, and encouraging a shift to more sustainable consumption patterns (European Commission, 2003a). From 1990 to 1995, the amount of waste generated in Europe increased with 10 percent and by 2020, it is estimated that we could be generating 45 percent more waste than what was generated in 1995 (European Commission, 2003a). Most of what is thrown away is either burnt in incinerators, or dumped into landfill sites and it is clear that treating and disposing of the waste without harming the environment becomes a major problem (European Commission, 2003a).

The EU's approach to waste management policy is based on the waste management hierarchy, which lists waste management options in order of preference, aiming to promote sustainable waste systems (European Commission, 2001; 2003a). There are several different interpretations of the hierarchy but the main principles are the same; the prevention and reduction of waste at source are the most favourable options and anything that cannot be prevented or minimised should be reused or recycled while energy recovery and final disposal, at landfill or incineration without energy recovery, are the least favourable options. One interpretation is presented in Figure 1.

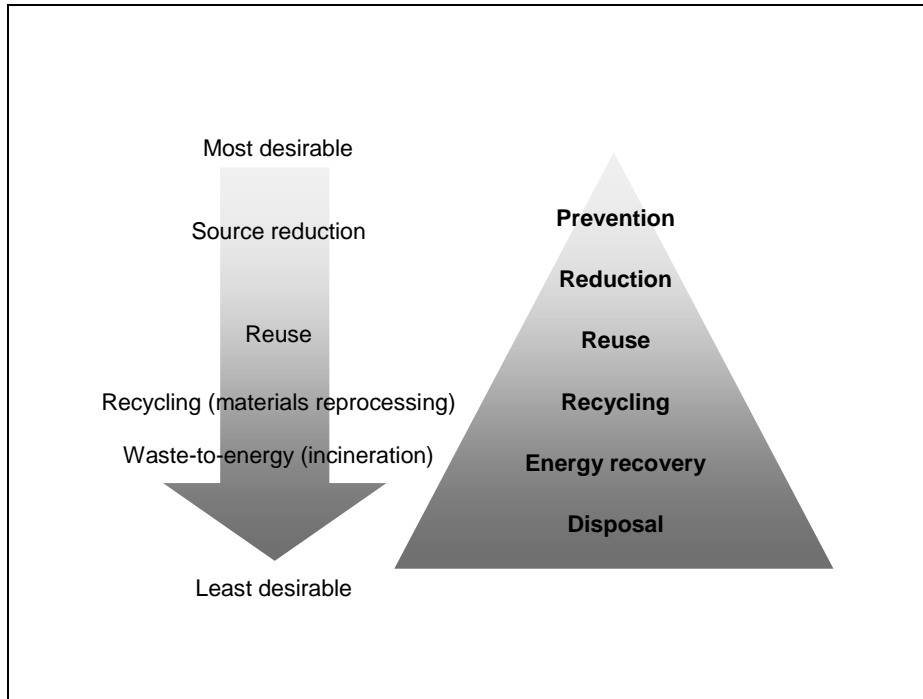


Figure 1 The waste management hierarchy (Source: based on European Commission, 2001 and Hanley, Shogren and White, 2001)

In the EU waste directive (75/442/EEC) it is stated that member states should take appropriate measures to primarily encourage the prevention or reduction of waste production and its harmfulness (European Council, 1996). These measures include for instance development of clean technologies, technical development and marketing of products designed to make no or the smallest possible contribution, by the nature of their manufacture, use or final disposal, to increasing the amount or harmfulness of waste and pollution hazards and the development of appropriate techniques for the final disposal of dangerous substances contained in waste destined for recovery. Secondly they should encourage the recovery of waste by means of recycling, reuse or reclamation or any other process with a view to extracting secondary raw materials, or the use of waste as a source of energy (European Council, 1996).

According to the waste directive, waste must be recovered or disposed without endangering human health and without the use of processes or methods likely to harm the environment (European Council, 1996). Operations for recovery mentioned in the directive includes for instance use principally as a fuel or other means to generate energy, recycling/reclamation of metals and metal compounds and recovery of components used for pollution abatement (European Council, 1996). Operations for disposal include for instance incineration on land or at sea, deposit into or onto land (e.g. landfill, etc.), (European Council, 1996).

The waste management hierarchy is used as a checklist to review the purpose and the environmental objectives set for the two EPR programmes. The environmental objectives are then used for analysing the environmental effectiveness of the actual implementations.

2.2 Main objectives of Extended Producer Responsibility

The main objectives of EPR are presented in this section. The interest for EPR as a policy principle is mainly related to its potential to prevent waste generation at source, which constitutes the top of the waste management hierarchy explained above.

A definition of EPR used by the OECD (2001) is “an environmental policy approach in which a producer’s responsibility, physical and/or financial, for a product is extended to the post-consumer stage of the product’s life cycle”⁵. EPR is based on two important features (OECD, 2001):

- **Shifting the responsibility upstream to the producer.** An important function of EPR is the transfer of the economic and/or physical responsibility of waste management from municipalities and the taxpayers to the producer. Environmental costs of treatment and disposal could then be incorporated into the cost of the product.
- **Providing incentives to producers to consider environmental aspects in the design of their products.** At the end of life of the product, indications are sent back to the producer to change the design of the product to reduce the environmental impact of the product. Producers are taking their responsibility “when they design their products to minimise environmental impacts over the products life-cycle and when they accept physical and/or economic responsibility for those impacts that cannot be eliminated by design”⁶.

EPR could be used as a means to address the problem with increased landfilling and waste incineration in many OECD countries (OECD, 2001). It can also help promote waste prevention and reduction, increased use of recycling materials in production, and increased resource efficiency, constituting common environmental goals shared by OECD governments (OECD, 2001).

2.3 Meanings of collective and individual producer responsibility

The interest for collective and individual producer responsibility in this study is mainly related to the potential for individual responsibility to support preventative measures such as eco-design⁷.

The interpretation of collective and individual producer responsibility seems to vary a lot between people involved in the implementation of EPR programmes. In order to clarify what is meant by the concepts, a brief presentation follows below.

In a recent paper, Tojo (2003) states that “a producer has an *individual responsibility* when he/she takes responsibility for the end-of-life management of his/her own products”⁸ and “when producers of the same product group together fulfil their responsibility for end-of-life

⁵ OECD, 2001, p.18

⁶ OECD, 2001, p.18

⁷ Eco-design means the systematic integration of environmental aspects into product design with the aim to improve the environmental performance of the product throughout its whole life cycle (EC, 2003).

⁸ Tojo, 2003. p. 52

management of their products regardless of the brand, these producers have *collective responsibility*⁹.

As there are not always distinct borders between type of responsibility and their corresponding schemes, it is important to note that the actual schemes set up for handling collective and individual producer responsibility may contain elements of both concepts. Producers may for instance set up a collective scheme that supports individual responsibility and producers may also combine individual and collective schemes. They may also set up individual solutions without separating their own brands.

In order to illustrate why producers are adopting individual or collective responsibility, an overview of some important advantages and disadvantages for producers is presented below.

Pros and cons with individual responsibility

One important advantage of an EPR programme based on individual responsibility is that it may promote design change more than that based on collective responsibility (Tojo, 2003). Individual financial responsibility may provide incentives to producers to strive for design change by differentiating the recycling fee depending on the actual recycling cost of the products (Tojo, 2003). Individual responsibility may also give producers a strong incentive to determine the real costs of recycling their products when negotiating with recyclers (Tojo, Lindhqvist and Davis, 2001). Individual solutions, including both economic and physical responsibility, offer producers to be in control of their costs and products (ENDS Report, 2002a). With individual schemes, it may also be easier to build strong relationships with customers, especially businesses, by developing loyalty and trust (ENDS Report, 2002a). Producers could also take advantage of the take-back responsibility and give incentives to customers to buy new products (ENDS Report, 2002a). Individual schemes could also give opportunities for expanding producers' businesses into new areas related to end-of-life management (ENDS Report, 2002a).

An important disadvantage of a programme based on individual responsibility is that it may face more administrative challenges compared to that based on collective responsibility (Tojo, 2003). Especially individual physical responsibility may include high costs for collection and logistics (ENDS Report, 2002a). There is also a risk that individual schemes result in higher costs for the consumer, lack of transparency and that they may not solve problems related to the handling of specific waste such as orphan products (Bornard, 2002).

Pros and cons with collective responsibility

The main advantage of collective responsibility is related to the synergy effects of collaboration between many producers through a collective system in terms of capacity and resources, a common infrastructure for end-of-life management and power when negotiating with end-of-life management operators (Tojo, et al., 2001). Collective schemes may also help solving acute problems related to the end-of-life management of large amounts of WEEE in an environmentally compatible way and facilitate the take-back of WEEE, as it may be convenient for consumers to have a single access point for returning their waste (Bornard, 2002).

⁹ Tojo, 2003. p. 52

The main disadvantage of collective responsibility is that in collective schemes, it is difficult to achieve design incentives through collective fee structures, as the environmental characteristics of the products that affect the costs for end-of-life management are not reflected in the size of the fee (Tojo, et al., 2001). This leads to that producers incorporating environmental aspects in the product development are sharing benefits of their products with competitors who have not invested in eco-design (Tojo, et al., 2001). In collective schemes with flat fees it may also be more difficult to have control over costs (ENDS Report, 2002a).

2.4 Policy evaluation criteria

There are several criteria usually used for environmental policy discussions to support government with the evaluation of whether and/or how to implement an environmental policy. Barde (1995) presents three categories of criteria including environmental aspects or environmental effectiveness, economic aspects or efficiency and political and administrative aspects such as distributional issues, acceptability and simplicity. Field (1997) brings up another set of policy evaluation criteria including efficiency, fairness, environmental justice, incentives for long-run improvements, enforceability and moral considerations. OECD (2001) has also listed a number of decision criteria, especially focused on EPR policies including environmental effectiveness, economic efficiency, equity and distributional effects, administrative feasibility and costs, concordance with institutional frameworks, political and social acceptability, adjustment costs associated with transactions and innovative advancements

In this study, the criterion of environmental effectiveness is selected for analysing the findings of the stakeholders' approaches to collective and individual producer responsibility. A main goal of any environmental policy instrument is to improve environmental conditions and therefore, environmental effectiveness is the most important criterion for policy evaluation (Börkey, Glachant and Lévêque, 2000). Regarding EPR programmes, this criterion could be used for evaluating if the EPR programme fulfils established purpose, goals, and objectives (OECD, 2001). Implementation of such a programme could be primarily reviewed on the basis of performance, including for instance, reduction in the amount of waste sent to disposal or new product design (OECD, 2001). The reason why this criterion is selected is that it is believed that an evaluation of environmental aspects may contribute with interesting perspectives to discussions about their implementation.

Another important criterion that was considered for the analysis is economic efficiency. This criterion refers to the level of economic costs for achieving a given environmental policy target (Börkey et al., 2000). In the context of evaluation of EPR programmes, a review of this criterion may include evaluating the costs of implementing the system for instance set-up, running costs and administrative costs, the costs for compliance for producers and how they are passed on, and the transaction and transition costs (OECD, 2001). However, this criterion is not included in the analysis. The stakeholders include economic efficiency criterion when choosing the manners of implementation but the starting point of the analysis is not to evaluate whether the solution is economically efficient but to explore how the respective manners of implementation meet other criteria regardless of the economic efficiency. In addition, as the author could not find enough economic data, the analysis would mainly be based on speculations.

Some other important issues related to, for instance, equity and distributional effects, administrative feasibility and innovative advancements are integrated in the analysis of

environmental effectiveness. Some aspects that may be reviewed regarding equity include whether a regulation affect different segments of society in an equitable manner, who will bear the costs and who will benefit, what regions, income categories, economic sectors and whether compensation and mitigation measures should be implemented (Barde, 1995). Innovative advancement may be used for evaluating whether the policy provides incentives for actors to find new innovative ways of reducing their environmental impacts (Field, 1999) and may include an evaluation of the extent to which an EPR programme can stimulate technological and managerial improvements (OECD, 2001). An evaluation of the administrative feasibility shows to what extent an EPR programme is feasible to carry out, including the capacity and capabilities of government and producers to as well as other factors such as free-riding, orphan and existing products, and trade and competition issues (OECD, 2001). It may also include evaluating the costs for executing and enforcing the programme, whether its implementation and integration has been smooth, whether producers were adequately informed about their responsibilities and the public about the programme, and the costs of informing and training producers (OECD, 2001).

3. Findings from the study

In this chapter, the findings from the interviews and literature review regarding the implementation of the EPR programmes and stakeholders' approaches to collective and individual producer responsibility are presented, first for Sweden and then for the UK. The contexts of the implementation of the two programmes are also explained and the findings are briefly summarised in the end of the chapter.

In this chapter the first two research questions are explored including how the EPR programmes are implemented in Sweden and in the UK and how different stakeholders approach collective and individual producer responsibility.

For each programme, the context surrounding the stakeholders is briefly explained. Then the stakeholders' approaches to the implementation of the EPR programmes including collective and individual producer responsibility are presented. The Swedish context and stakeholders' approaches will be presented first followed by the UK. The stakeholders are divided into different categories depending on what interest group they represent. For each stakeholder, the findings are presented including a short general introduction, its approach to collective and individual producer responsibility and position regarding other important issues.

3.1 Explaining the Swedish context

A new set of environmental regulations for end-of-life¹⁰ electrical and electronic products or electrical waste was introduced in Sweden on 1 July 2001 including a producer responsibility ordinance regulating the different obligations of producers, a ban on landfilling, combusting or shredding electrical waste that has not first been treated by an authorised operator introduced into the waste ordinance and specific regulations on what precautions that the pre-treaters should take (Naturvårdsverket, 2003c).

3.1.1 Environmental objectives

For producer responsibility in general, Producentansvarsutredningen (SOU 2001:102) found that the most important objectives are to reduce the amount of generated waste, reduce the amount of waste that goes to landfill, develop less energy and material intensive goods, reduce littering, and reduce the amount of environmentally harmful substances in goods and waste.

According to Naturvårdsverket (2003a) the purpose of the legislative framework for WEEE is to create incentives for the producers to develop less environmental harmful products, which are adjusted to a higher level of recycling, and to support an environmentally sound management of WEEE.

Kretsloppsdelegationen (1996) brings up some important eco-cycle objectives among the most important requirements that an EPR programme for WEEE has to fulfil. These include incentives for producers to develop products containing less hazardous substances, incentives for better resource management, incentives for producers to manufacture products with long life span and ability to upgrade, the coverage of the most important

¹⁰ End-of-life management includes pre-treatment, recycling and other activities related to the handling of WEEE. Sometimes pre-treatment and recycling are used for the meaning of end-of-life management.

products and environmentally correct handling of hazardous parts in the product and recycling of scarce resources.

The purpose of the implementation of the WEEE regulations according to Producentansvarsutredningen (2001:102) is to create incentives for producers to develop EEE with less environmental impact, adjust them for increased recycling and recovery and to achieve an environmentally sound waste management when the products are disposed.

3.1.2 Roles and responsibilities

The main responsibilities in the Swedish legislation are briefly described in Table 2 (Naturvårdsverket, 2002; 2003c; Förordning (2000:208); El-Kretsen, 2003). Primarily there are four stakeholder groups affected by the legislation including producers, municipalities, pre-treaters and end-users. Municipalities and local authorities are assumed to be similar.

Producers	Municipalities	Pre-treaters	End-users
<ul style="list-style-type: none"> - Take-back of old products when selling a similar product (old-for-new rule) - Provide suitable collection points for customers - Inform customers about responsibility - Handle received products in an environmentally correct way - Provide information about the product content 	<ul style="list-style-type: none"> - Collect all waste including old products from households (except products taken back by producers) - Handle products in an environmentally correct way 	<ul style="list-style-type: none"> - Follow detailed instructions - Document the methods used for pre-treatment - Documentation of WEEE for control and statistical follow-up 	<ul style="list-style-type: none"> - Professional users: responsible for waste occurring in their own activities - Possibility to return old products to producer when buying a similar product (old-for-new rule) - Private users (households): let the municipality take care of the old products

Table 2 Important responsibilities in the Swedish legislation

- **Producers.** All producers¹¹ are obligated to accept, free of charge, WEEE handed over by customers when buying a similar product, independent of the brand, under the old-for-new rule. They are also financially responsible for the end-of-life management of the returned WEEE. Producers can receive WEEE at the point of sales or redirect the customers to other suitable collection points, charges covered by the producer. They are obliged to inform customers about their responsibility. Producers must handle the received products in an environmentally correct way and all collected WEEE should be sent to a certified pre-treater. They must provide information about the content needed for an environmentally correct disposal. Producers should provide information to Naturvårdsverket about their system for collection and pre-treatment, the amount of WEEE collected, where WEEE has been collected and how the collected material has been taken care of.

¹¹ Including professional manufacturers, importers and retailers of EEE in Sweden.

- **Municipalities.** Municipalities are responsible for the collection of all WEEE from households, except from waste, included in the producer responsibility. This means that the municipalities are not responsible for the old products, which have been accepted by the producers but for the remaining WEEE from households.
- **Pre-treaters.** Before WEEE can be landfilled, combusted or fragmented it must be pre-treated by certified pre-treaters. The pre-treaters should follow the detailed instructions for how the collected WEEE must be treated and what safety measures to be taken. Pre-treaters are for instance responsible for documenting the method used and the amount and type of incoming WEEE as well as how it has been treated and where it has been sent. This documentation is used for monitoring and statistical follow-up.
- **End-users.** All end-users could return their old products to the producers when buying similar new products according to the old-for-new rule. The alternative for households is to return the WEEE to the municipalities. Professional end-users such as companies and public administrations are responsible for all wastes that occur in their activities. If they do not use the alternative of returning their old products to the producers when buying new ones, they would in theory have to pay for that the WEEE is treated in an environmentally correct way. It is however doubtful whether end-users have to pay for this in practice.

3.1.3 El-Kretsen and Elretur

The most common way of collecting WEEE goes through Elretur whose collection system is mainly based on the recycling centres¹² of the local authorities (Naturvårdsverket, 2003a).

As producers and municipalities have shared responsibility for WEEE in the Swedish legislation producers represented by El-Kretsen AB and local authorities represented by the Swedish municipality organisation and the Swedish association of waste management (RVF) are now cooperating through a collection system called Elretur (El-Kretsen, 2002).

El-Kretsen is a service company created and owned by 22 industry organisations aiming to solve the producer responsibility for WEEE (El-Kretsen, 2002). With Elretur, the local authorities are responsible for arranging suitable collection systems for the WEEE from the citizens while the producers through El-Kretsen are responsible for arranging transportation pre-treatment, recycling and information about the result of the recycling (Naturvårdsverket, 2003a).

In Figure 2 is an overview of how Elretur works in practice (El-Kretsen, 2002).

¹² Recycling centres and civic amenity sites are assumed to have similar meanings.

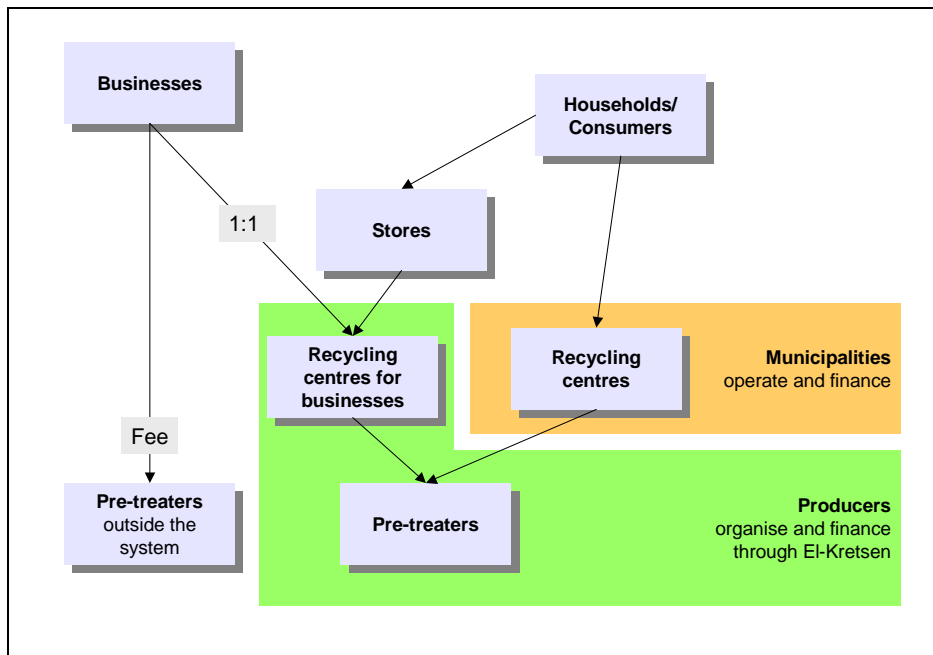


Figure 2 The elretur collaboration (Source: based on El-Kretsen, 2002)

The municipalities, which are responsible for the collection of all WEEE from households, independent of if it comes from exchange of a new product or not, organise and handle the recycling centres and other local collection at their own costs (El-Kretsen, 2002). Through El-Kretsen, producers transport all the collected WEEE to qualified recyclers where it is treated according to the legal requirements (El-Kretsen, 2002). This means that the local authorities and El-Kretsen work within their respective area at own responsibility (El-Kretsen, 2002). The municipalities are responsible for informing the households about where and how they can return WEEE and El-Kretsen has the overall responsibility for the information to organisations wanting to return WEEE, to suppliers and retailers, to employees at the collection stations, etc (El-Kretsen, 2002).

El-Kretsen takes care of its members' obligations according to the ordinance, but with two important exceptions: the producers can redirect the consumer to another collection place, the one that is provided by the local authority; and the producer is still responsible for providing the pre-treaters with information of the content of their products (Naturvårdsverket, 2003a).

By 2002/2003, El-Kretsen had about 500 producers as paying members, constituting 85-95 percent of the Swedish market for EEE affected by the regulations (Naturvårdsverket, 2003a). About 75 000 tons of WEEE were collected and recovered within El-Kretsen during 2002, with refrigerators or freezers excluded and this means a collection rate of about 8.4 kg per inhabitant (Naturvårdsverket, 2003a).

The activities of El-Kretsen are financed through member fees including an initial fee of 500 SEK when joining the scheme and an annual fee of 500 SEK (Naturvårdsverket, 2003a). In addition, there is a monthly flexible fee related to the amount and type of products put on the market (Naturvårdsverket, 2003a). The industry organisation IT-Företagen has for the product category IT and telecommunications equipment chosen a different system for calculating the monthly fee based on the weight of products sold the previous year (market share) (El-Kretsen, 2003). The real costs for recovery and specific services are allocated to a

certain industry segment while the common costs are divided among all the members (El-Kretsen, 2003). The fees from members in a certain industry are only used for covering the costs of this industry in order to avoid any industries to be subsidised by fees from other industry segments (El-Kretsen, 2003). The cost for the end-of-life management covered by the producers, is transferred to the product price paid by the customer when buying a new product (El-Kretsen, 2003).

3.1.4 Alternatives to El-Kretsen

Besides the recycling centres provided by the local authorities, there are other initiatives, which have contributed to an improved collection service for the citizens (Naturvårdsverket, 2003a). The collection of WEEE at residences (fastighetsnära insamling) is one alternative that has increased during 2002, for instance in Stockholm (Naturvårdsverket, 2003a).

There are a number of producers that are taking an individual responsibility and are not members of El-Kretsen, but they only represent a small part of the collected WEEE (Naturvårdsverket, 2003a). The number of producers that are signing individual agreements with recyclers is increasing, especially within the IT industry (Naturvårdsverket, 2002). The collection is managed together with the recycler where the WEEE is collected directly at the end-user's site, often a commercial user (Naturvårdsverket, 2002). The service is often customer adapted including specific reports, collection at the door, statistics, etc (Naturvårdsverket, 2002).

Euroenvironment

Euroenvironment AB is an example of a company offering take-back services independent of the collection system of El-Kretsen. Its business idea is to provide a compliance scheme for collection and handling of returned IT goods for companies in the IT industry (Euroenvironment, 2003). The company was established in 2001 and has two member companies in Sweden and 18 in Norway (Euroenvironment, 2003).

Euroenvironment offers a number of services such as administration of the collection system according to the legislation, collection of waste, transport, recycling and reporting to authorities (Euroenvironment, 2003). Customers can return old IT equipment when buying new equipment from some of the member companies without charges and containers could be placed at the producers' sites for collection of IT waste (Euroenvironment, 2003).

Ikea

Ikea has decided to stand outside El-Kretsen and instead arrange collection of WEEE by itself (Naturvårdsverket, 2002). The collection system is based on that the customers return their WEEE at one of the Ikea stores in Sweden independent on whether the customers buy a new similar product at the same time (Naturvårdsverket, 2002). Collected WEEE is transported to STENA for treatment (Naturvårdsverket, 2002).

Brown goods industry

The producers Siba and On-off cancelled their agreement with El-Kretsen earlier this year, claiming that they have taken a too large responsibility within Elretur, followed by all producers in the TV and radio industry (Renhållningsverksföreningen, 2003a). According to the legislation, the producers are responsible for WEEE returned to them under the old-for-new rule, and the municipalities for the end-of-life management of the rest of the historical waste (RVF, 2003a). The effects are that the producers now are responsible for returned

WEEE according to the old-for-new rule, and do not have to pay for the recycling for the remaining WEEE (RVF, 2003a). This decision is expected to increase the confusion at the consumer level; they will have to learn that their TV sets should now be returned to the producer's site in some situations (in case of buying a new one) and to the municipal collection in other cases (RVF, 2003a). There is a risk that this will become a problem for the local authorities as large waste streams, which should be covered by the producer responsibility, are transferred to the local authorities (Naturvårdsverket, 2003a).

3.1.5 Adaptation to the WEEE directive

The Swedish legislation will have to adapt to the future requirements stated in the WEEE directive. Even though the directive has been published, it is still too early to foresee in detail how the Swedish legislation will develop. Before the Swedish legislation will be adapted, discussions will probably take place with the various stakeholders involved in the future legislation formulation.

The EU directive is a minimum directive, which means that there are opportunities for member countries to set up stricter legislation than what has been formulated in the directive. Concrete issues such as how the collection will be organised and how the fees will be affected depend on how the Swedish rules are formulated. The directive is further presented in section 3.3 Explaining the UK context but some of the major differences for the Swedish programme are briefly explained below (Directive 2002/96/EC; El-Kretsen, 2003).

- **Product categories.** The product categories are almost the same as in the existing Swedish law. However, there are a few products that are added or missing compared to the Swedish system; refrigerators and freezers, which are today under the responsibility of the local authorities will be included and for instance light bulbs will be excluded.
- **Increased responsibility on producers.** According to the directive, the private households could return their WEEE either in the stores or to recycling centres of the local authorities. Producers have the economic responsibility for transportation and handling of the returned goods. The old-for-new rule applied on private household waste will disappear.
- **Collective and individual responsibility.** In the directive there is a difference between historical and new waste, i.e. waste from products sold before and after 13 August 2005. For historical waste, all producers are collectively responsible for organising and financing handling through one or more systems to which all producers contribute proportionately. For new waste, the producers are individually financially responsible. This means that for each brand and product it should be possible to track the costs for taking care of this specific product. Producers can choose to fulfil this obligation either individually or by joining a collective scheme.
- **Economic guarantee and labelling.** In order to ensure coverage of future costs of handling a specific product type, the producer has to set up an economic guarantee in terms of money on a locked bank account or insurance. To be able to identify when a product has been sold, a European standard for labelling of all EEE will be introduced.
- **Collection and recovery targets.** The directive also incorporates a collection target of 4 kg of WEEE per person and year from households, and specific recovery targets for

different categories of products. The Swedish legislation does not state any detailed target, in terms of tons or percentage, for how much should be collected or recovered.

3.2 Swedish stakeholders' approaches to implementation

This section includes a presentation of the stakeholders' approaches regarding the implementation of the EPR programme in Sweden. The stakeholders are:

- The Swedish EPA, Naturvårdsverket
- The EEE industry including the producers¹³ represented by the manufacturers Dell and Fujitsu Siemens and retailers Siba and Ikea, as well as the industry organisations IT-företagen, the Association of Swedish Engineering Industries (Teknikföretagen) and MobilTeleBranschen (MTB)
- The service providers El-Kretsen and Eurovironment
- The waste treatment industry including the companies HA Industri and Ragnsells Electronics Recycling (Ragnsells Elektronikåtervinning, Ragnsells), as well as the Swedish Recycling Industries' Association (Återvinningsindustrierna, ÅI)
- The local authorities including the Swedish association of Waste Management (Renhållningsverksföreningen, RVF) and Renhållningsförvaltningen Stockholms Stad (RSS)

3.2.1 Naturvårdsverket – keeping a neutral position

Naturvårdsverket is actively involved in the development of EPR programme for WEEE in Sweden and has several different roles. It is responsible for the recycling regulations and the ordinance, serves as a discussion partner and participates in discussions on an EU level and about the WEEE directive and follows up the EPR in Sweden through the yearly report, "Collect and recover!" (Sandahl, 2003)¹⁴.

Approach to collective and individual producer responsibility

For Naturvårdsverket, it is important to keep a neutral position and to be objective in discussions in general, and it expects that the industry is active in taking its own initiatives and in exploring new business opportunities within EPR (Sandahl, 2003). The original approach of Naturvårdsverket was to start with a generic system and look at what problems could arise (Nyteknik, 2003).

Naturvårdsverket is content with El-Kretsen as it is working well especially regarding the two most important parameters for Naturvårdsverket, reporting and collection results, which have exceeded expectations (Sandahl, 2003). Naturvårdsverket is also positive to the Ikea collection system, as the company is taking the collection seriously even though it has only achieved low collection rates so far (Sandahl, 2003). However, it seems to be more difficult

¹³ Producers include manufacturers, importers and distributors if not other is stated.

¹⁴ Jenny Sandahl is working with the implementation of the EPR programme at Naturvårdsverket.

to follow up individual solutions and therefore the risk for freeriders increases when there are more individual solutions (Sandahl, 2003).

Other issues

Today, Naturvårdsverket participate in discussions with the industry on how to formulate the future legislation based on the WEEE directive (Sandahl, 2003). There are many question marks to deal with and some issues are for instance the collection system, the scope of the producer responsibility and how to best arrange a register (Sandahl, 2003). The law is scheduled to be proposed at the end of this year and until then discussions are going on with the industry (Sandahl, 2003). During the development of the ordinance Naturvårdsverket (2003a) thinks it is important to create a stable system, which facilitates monitoring and compliance and works well for local authorities, producers and consumers.

Naturvårdsverket (2003a) thinks that the current system can be further improved especially regarding monitoring compliance by the local authorities. In the current system it is difficult to identify companies that are not complying with the legislation (Sandahl, 2003). The local authorities are responsible for monitoring but this does not work properly today due to lack of resources but the implementation of a register will hopefully help solving this issue (Sandahl, 2003). Naturvårdsverket (2003a) still thinks that it is possible to further increase the ambition for monitoring in many local authorities. Another area that could be further improved is information to consumers on collection points provided by producers and local authorities (Naturvårdsverket, 2003a).

3.2.2 The EEE industry – manufacturers and retailers

3.2.2.1 Siba – from El-Kretsen to take-back in stores

Siba is one of the leading retailers of home electronics in Sweden (Siba, 2003). Siba was earlier a member of El-Kretsen but from July 1 2003, it has decided to cancel the contract and arrange free take-back of old products for their customers in their stores when buying a product that provides similar function (Bengtsson, 2003)¹⁵.

Approach to collective and individual producer responsibility

The main reason why Siba decided to leave El-Kretsen is that the costs were too high for take-back of old products and that the customers have to bear this cost in the end (Bengtsson, 2003). Other advantages of an individual solution are that Siba can also better ensure that the collected WEEE is handled in an environmentally correct way, and that it can influence the cost for handling of WEEE in a more efficient way (Bengtsson, 2003).

Other issues

For Siba it is important to have a good contact with authorities and other actors in society and the company also wants to continue to have a good relation with Naturvårdsverket in order to take environmental responsibility according to existing and future legislation (Bengtsson, 2003).

¹⁵ Martin Bengtsson is working at Siba.

3.2.2.2 Dell – combining third party solutions

Dell is the world's leading direct computer systems company and a key business concept is the direct customer contact (Dell, 2003). In Sweden, Dell has solved its producer responsibility by being a member of both El-Kretsen and Euroenvironment; El-Kretsen is mainly used for products from private consumers while Euroenvironment handles goods for business and institutional customers (Olsson and Albers, 2003)¹⁶.

Approach to collective and individual producer responsibility

It would have been possible in practice to let Euroenvironment handle both consumer and business WEEE for Dell. However, in order to make sure that the company complies with the legislation, Dell also decided initially to be a member of El-Kretsen (Olsson and Albers, 2003). The main issue was whether Euroenvironment were required to have collection points in all the regions of Sweden (Olsson and Albers, 2003; Albers, 2003). Therefore, the main advantage of using both programmes was to assure a system with full coverage for collection of discarded products, which is available to all Dell's customers in Sweden (Olsson and Albers, 2003).

Dell also evaluated only individual solutions when the legislation was enforced, but decided to also engage third parties mainly because a collection system covering the entire Sweden would otherwise have required a lot of administration and high costs (Olsson and Albers, 2003).

Since Dell has direct contact with its customers, it is possible to actively market and promote the recycling services of Euroenvironment to Dell's business customers building strong long-term customer relationships, a possibility that contributes to its competitiveness (Olsson and Albers, 2003). Through Euroenvironment, Dell can have better control in general and get more detailed information on their bills compared to El-Kretsen (Olsson and Albers, 2003). Even though El-Kretsen is handling larger volumes than Euroenvironment due to the large number of members, there is not that big difference between the prices per kilo that Dell has to pay to the schemes (Olsson and Albers, 2003).

Other issues

Dell perceives some important weaknesses in the operation of El-Kretsen. In El-Kretsen it is difficult to control how much waste and what type of waste that companies hand in, to verify compliance and know how much comes from households and from businesses respectively (Olsson and Albers, 2003). In addition, El-Kretsen does not seem to stimulate environmental aspects in product development (Olsson and Albers, 2003). The perception of El-Kretsen in the industry as the ultimate solution may make it difficult for companies that have ideas on alternative solutions to choose other directions (Olsson and Albers, 2003).

The market share estimated by El-Kretsen is based on the weight of previous year's sales and is used for distributing the total costs among the members; the sales figures of all members are gathered in order to calculate the market share of the members within El-Kretsen (Olsson, 2003a). Dell thinks that the company is paying a too large part of the total cost for IT and office equipment in El-Kretsen, as Dell reports their total market share covering both consumer and business markets, while El-Kretsen is primarily used for handling of private

¹⁶ Marita Olsson is working at Service Operations including partner relations at Dell and Marcus Albers is Environmental Coordinator at Dell in Sweden.

consumer goods (Albers, 2003). In addition, Dell's share of the private consumer market is fairly small compared to other producers on the market and to the market share of the business sector (Albers, 30 June 2003). It might also have been more fair to set up a more detailed categorisation of product groups than today since Dell is now partly paying for some heavy WEEE of other producers within the same category such as copying machines and printers (Olsson and Albers, 2003).

Being a member of both El-Kretsen and Euroenvironment, it should be possible for Dell to get compensation from El-Kretsen for their WEEE handled by Euroenvironment. However, when Dell has tried to get compensation it does not seem to be as easy as it thought would be; El-Kretsen has requested more information from Dell than El-Kretsen can provide regarding the amount and type of equipment that has been collected (Olsson, 2003b).

3.2.2.3 Ikea – take-back in stores

Ikea sells some products that are covered in the legislation, for instance lighting equipment, light bulbs, low energy lamps, white goods and some small products such as clocks, and fire alarms (Naturvårdsverket, 2002). Ikea decided already when the legislation entered into force in 2001 to set up an independent compliance scheme and not to be part of the El-Kretsen collaboration (Andersson, 2003)¹⁷.

Approach to collective and individual producer responsibility

The reasons for selecting the individual solution are that the company already has good infrastructure for taking care of the WEEE by itself; it already has established communication channels with their customers through their catalogues, stores and the website, it already has a successful collaboration with a third party for end-of-life management of collected WEEE and that there is an existing collection network through the stores covering entire Sweden (Andersson, 2003). By setting up an individual scheme, Ikea could also show that it is a responsible company, which is important as the company is continuously examined by the society (Andersson, 2003).

Other issues

In order to improve the collection rate at Ikea, which is estimated to be about 3 percent of the total sales of EEE in 2002, the company is investing in improving the communication with its customers (Andersson, 2003). One crucial condition for being able to set up an independent scheme was that Ikea had full support from Naturvårdsverket and the relation with Naturvårdsverket is crucial for Ikea to continue its activities (Andersson, 2003). If Naturvårdsverket had not supported Ikea, it probably would have tried another solution and they will continue to have their own scheme as long as Naturvårdsverket is supporting them (Andersson, 2003).

3.2.2.4 Fujitsu Siemens – member of El-Kretsen

Fujitsu Siemens Computers (Fujitsu Siemens) is the leading European computer company, which is a member of El-Kretsen (Fujitsu Siemens, 2003).

¹⁷ Jan Andersson is Environmental Manager at Ikea Svenska Försäljnings AB.

Approach to collective and individual producer responsibility

For Fujitsu Siemens, El-Kretsen has turned out to be more expensive than expected, which might be an effect of the high collection rates (Simons, 2003)¹⁸. Fujitsu Siemens is not looking at individual solutions today mainly because it is difficult to guarantee a collection system covering entire Sweden that is open for everybody (Simons, 2003). Fujitsu Siemens has no intention to build a totally individual system but maybe a solution run by a third party; Euroenvironment might have a possible solution, but it is unsure if it would work in practice (Simons, 2003).

Other issues

For Fujitsu Siemens, the main challenges facing the El-Kretsen system are to set fair and equal prices for the members and to stimulate reuse, as Fujitsu Siemens sees opportunities in reuse of components and parts of the products (Simons, 2003). Other challenges are that participation in El-Kretsen does not seem to lead to design of environmentally friendly products, as the system of El-Kretsen is mainly formed to regulate recycling activities, and that it seems difficult to have control of El-Kretsen, as it is an open system (Simons, 2003).

3.2.2.5 IT-företagen – owner of El-Kretsen

Svenska IT-företagens Organisation (IT-Företagen) is an industry organisation for companies that develop, manufacture and sell IT products and services, incorporating about 600 members (IT-företagen, 2003).

Approach to collective and individual producer responsibility

For IT-företagen it is important that the member companies can decide themselves about how to comply with the legislation and therefore it has not stated any particular view regarding collective and individual producer responsibility (Thorslund, 2003)¹⁹. Since there does not seem to be any limitation in the legislation for individual initiatives it seems reasonable for IT-företagen that producers set up individual solutions (Thorslund, 2003). Most of its members have joined El-Kretsen and several large companies have also set up complementary individual solutions as a response to the customers' demand for environmental services (Thorslund, 2003). IT-företagen has, on behalf of its members, been involved in the creation of El-Kretsen and is one of its owners (Thorslund, 2003).

Other issues

The general interest in EPR issues of the members of IT-företagen is mainly related to costs (Thorslund, 2003) and with El-Kretsen it has been possible for their members to get large cost savings (IT-företagen, 2003). Among the members of IT-företagen El-Kretsen seems to function quite well in general (Thorslund, 2003). El-Kretsen continuously receives feedback from the industry and there are also discussions about how the system can be improved, for instance regarding fair price levels and freeriders (Thorslund, 2003).

¹⁸ Björn Simons is responsible for environmental issues at Fujitsu Siemens Computers.

¹⁹ Ewa Thorslund is Project Manager for environmental issues at IT-företagen.

3.2.2.6 Teknikföretagen – taking an objective position

The Association of Swedish Engineering Industries (Teknikföretagen) has about 3 000 member companies within telecommunications, metal, electronics, computer technology, transport, etc, and about 80 percent of the members have less than 100 employees (Teknikföretagen, 2003). Teknikföretagen was actively involved in the discussion process in 2001 through the environmental council for electrical and electronic products (MEEP)²⁰ but is not one of the owners of El-Kretsen (Sandqvist, 2003)²¹.

Approach to collective and individual producer responsibility

For Teknikföretagen, it is important that the members decide themselves how to deal with EPR related issues including best solutions for how to comply with the legislation and Teknikföretagen has not taken any specific position regarding collective and individual producer responsibility (Sandqvist, 2003). Promoting harmonisation of EU legislation, Teknikföretagen supports the Orgalime²² position regarding the WEEE directive (Sandqvist, 2003).

Orgalime (2003b) emphasises that individual producer responsibility is compatible with collective schemes by stating: “it is important to note that individual producer responsibility is not in contradiction with the establishment of collective systems/schemes to carry out take-back, treatment and recycling of waste”²³. It also points out that producers should only be legally responsible for the costs associated with the take-back and treatment of their own products and that producers must never be required to pay for costs over which they have no control (Orgalime, 2003b).

Regarding financing of historical waste, Orgalime (2003b) means that the cost for producers has to be shared collectively by all producers, in proportion to their respective market share when the recycling cost occurs.

Other issues

Some other issues related to the WEEE directive that Teknikföretagen is concerned about include uncertainties regarding scope and definitions, how to implement registers and guarantees in practice and uncertainties about the actual obligations for producers regarding collection systems (Sandqvist, 2003).

3.2.2.7 MTB – owner of El-Kretsen

MobilTeleBranschen (MTB) is an industry organisation representing suppliers, distributors, and retailers within the mobile telephone industry (MTB, 2003). Before the legislation entered into force in 2001, the members of MTB had joined a scheme for collection of mobile phones, Returtelefoni (Holme, 2003)²⁴. As it has turned out, mobile phones are

²⁰ Miljörådet för Elektriska och Elektroniska Produkter is a network for industries affected by the EPR ordinance for WEEE.

²¹ Maria Sandqvist is in charge of dealing with issues related to product requirements and the environment at Teknikföretagen.

²² Orgalime is the European federation of national industrial associations representing the European mechanical, electrical, electronic and metal articles industries, representing about 130 000 companies mainly small and medium sized enterprises (Orgalime, 2003a).

²³ Orgalime guidance on Producer Responsibility in the proposed WEEE Directive, p. 1 (Orgalime, 2003b).

²⁴ Mats Holme is working at the MTB secretariat.

difficult to collect since consumers seem to have a special relation to their mobile phones leading to a very small collection volume (Holme, 2003).

Approach to collective and individual producer responsibility

When the legislation entered into force the members decided to join El-Kretsen as it constituted a much better alternative compared to Returtelefoni regarding both economic and quality aspects (Holme, 2003). MTB is today one of the owners of El-Kretsen, and its members see El-Kretsen as the only competitive solution in the market today (Holme, 2003).

3.2.3 Third party service providers

3.2.3.1 El-Kretsen – allowing complementary initiatives

El-Kretsen is a service company owned by 22 industry organisations and Elretur is the collaborative system between the producers organised through El-Kretsen and all the local authorities in Sweden (Naturvårdsverket, 2003). Some IT producers have solutions besides El-Kretsen but this is a small part with limited volumes (Schultz, 2003)²⁵. The figure for collected WEEE is today 13 kg per person per year including freezers and fridges (Schultz, 2003). The main objective of El-Kretsen is to fulfil the legislation and the idea is based on the members' willingness to solve EPR in a good way (Schultz, 2003).

Approach to collective and individual producer responsibility

El-Kretsen is a flexible system and does not limit individual companies to choose the best solution available (Schultz, 2003). El-Kretsen has a structure, which allows complementary solutions as the members with own collection solutions can get refunded as they reduce the burden for El-Kretsen with the corresponding volume (Schultz, 2003). The amount refunded does not reflect real costs for the member but how much it would have cost to take care of within El-Kretsen (Schultz, 2003).

The strengths of El-Kretsen are mainly related to economies of scale when handling large volumes (Schultz, 2003). If a producer needs to handle a small volume, El-Kretsen recommends them to handle it themselves; a potential weakness of El-Kretsen, which lies within the handling of individual products (Schultz, 2003). Sometimes they are forced to refuse some equipment for instance some medical equipment (Schultz, 2003).

Other issues

When El-Kretsen was created, different alternatives were evaluated. The main issue was if it was reasonable to let the local authorities have one system, as they would have been obliged to have anyway, and the producers another one, or if it would have been better to collaborate with the local authorities (Schultz, 2003). El-Kretsen had very little time to set up the activities and received the last instructions from Naturvårdsverket only three months before enforcement of the legislation and still, the system could reach high collection rates already from the beginning (Schultz, 2003).

El-Kretsen is focused on the recycling industry and the organisation has good knowledge of the industry and on developing a strong competence related to procurement of recycling services (Schultz, 2003). El-Kretsen is a demanding customer in procurement, which may put hard pressure on prices (Schultz, 2003).

²⁵ Jörgen Schultz is the Director of El-Kretsen.

3.2.3.2 Euroenvironment – focus on customer adapted solutions

Euroenvironment AB is an example of a company outside the collective system of El-Kretsen and its business idea is to provide a system for collection and handling of returned IT goods according to the legislation for companies in the IT industry (Euroenvironment, 2003).

Euroenvironment serves as an intermediate specialised interface between producers and recyclers focusing on collection (Gulvik, 2003a)²⁶. The people behind Euroenvironment have a long experience within the IT industry and therefore also have good knowledge of businesses within this industry (Gulvik, 2003a). Euroenvironment is focusing on developing a strong competence related to procurement of recycling and transportation services (Gulvik, 2003a). Euroenvironment is mainly focusing on customers within the IT industry and is interested in establishing partnerships with a few members who are seeing EPR as a challenge with several opportunities (Gulvik, 2003a).

Approach to collective and individual producer responsibility

The main objective of the business of Euroenvironment is to add competitive strength to members focusing on the environment, finding ways to set up individual schemes based on the members' existing environmental activities and to fulfil their needs (Gulvik, 2003a).

Euroenvironment has a strong focus on customer relations, listening to their customers, and it is important to have enough capacity to meet the high quality demands from customers (Gulvik, 2003a). Euroenvironment is prepared for an increasing demand for individual collection systems as it can meet the specific demands of the customers (Gulvik, 2003a). Euroenvironment does not want to influence too much on the customers' decisions and want to serve more like an advisory and informative partner when customers are making their decisions (Gulvik, 2003a).

Other issues

For Euroenvironment, it is important to find new ways to improve WEEE reuse opportunities, as this is better than recycling from an environmental perspective and there will probably be an increasing demand for services related to reuse, as an effect of the WEEE directive (Gulvik, 2003a). It is important that the WEEE can be separated and controlled as early as possible in the collection process in order to ensure the product quality and local collection indoors would lead to improved potentials for reuse of products (Gulvik, 2003a).

For Euroenvironment it is important that there are a variety of private complements to the collection at the local authorities in order to contribute to the increase of collection of WEEE (Gulvik, 2003b). Collection through local authorities is important as it has a central role and is financed by taxes and there are no real alternatives to this solution (Gulvik, 2003b). However, there is a need for complementary solutions offering collection of specific waste streams (Gulvik, 2003b). This would reduce the pressure on the local authorities sites and increase the total volume of collected WEEE (Gulvik, 2003b).

When Euroenvironment contacted all the 289 local authorities in Sweden for consultation concerning their collection system, it took several months and a lot of effort before Euroenvironment had received responses from most of the local authorities (Gulvik, 2003b). This could be explained by the fact that the Elretur agreement between El-Kretsen and the

²⁶ Hans-Christian Gulvik is the CEO of Euroenvironment in Sweden.

local authorities is based on the idea that the local authorities only need to communicate with one single actor, keeping administration costs at a low level (Gulvik, 2003b). Euroenvironment discussed the situation with the Competition Authority, Naturvårdsverket and the Ministry of Environment but Gulvik (2003b) thinks that they have taken a passive standpoint on this issue.

3.2.4 Waste treatment industry

3.2.4.1 HA Industri – total solutions under individual contracts

HA Industri is a family company that intends to offer profitable and convenient solutions for recycling through collection and trade of recycled paper, plastics and metal (HA Industri, 2003). HA Industri only has the permission to transport and store WEEE and not to pre-treat and recycle (Liljeberg, 2003)²⁷.

Approach to collective and individual producer responsibility

The customers of HA Industri have three options: they can either leave the WEEE at the recycling centre of the municipalities, call El-Kretsen and order collection services or let HA Industri take care of the WEEE at the same time as other waste streams are collected (Liljeberg, 2003). There is an increasing interest for WEEE collection among its customers especially in total solutions covering all waste streams that occur in the customers' businesses (Liljeberg, 2003).

Other issues

HA Industri has investigated the opportunities for competing with El-Kretsen but has not found a good solution yet (Liljeberg, 2003). Today's solution works well but still its customers are paying for the cost that they should not have to as the producers should take the cost (Liljeberg, 2003). HA Industri is waiting to see what to do depending on the next steps of El-Kretsen (Liljeberg, 2003).

3.2.4.2 Ragnsells – promoting direct customers

Ragnsells Elektronikåtervinning (Ragnsells) is one of the largest recycling companies of WEEE in Sweden (Miljö & Utveckling, 2003). When the WEEE ordinance was implemented, Ragnsells increased its recycling volumes and number of employees by three times and the WEEE collected through the El-Kretsen system represented about 75 percent of the total volume (Miljö & Utveckling, 2003). This made Ragnsells the largest recycler of El-Kretsen covering about 25 percent of the contracts (Miljö & Utveckling, 2003). The remaining volume came from individual direct contracts with producers and other businesses (Eriksson, 2003)²⁸. Earlier, Ragnsells had direct contracts with its customers for collection of business waste but about 50 percent of the business waste was taken over by El-Kretsen (Eriksson, 2003).

Approach to collective and individual producer responsibility

Ragnsells could not renew its two-year contract with El-Kretsen from July 1 2003, as one of its main competitors lowered its prices and got a contract corresponding to 30 percent of the total volume of El-Kretsen (Eriksson, 2003). As a result, 50 employees had to leave from Ragnsells and only 13 will remain after the contract ends (Eriksson, 2003).

²⁷ Evelina Liljeberg is working at HA Industri AB.

²⁸ Stefan Eriksson is Development and Production Manager at Ragnsells Elektronikåtervinning.

For Ragnsells, it is important that the recycling industry continues to make investments to meet the increased demand even though they become dependent of winning the contracts with El-Kretsen (Miljö & Utveckling, 2003). The results of such a dependency is that the profitability will decrease as the prices are pressed down in order to survive in the market and if loosing a contract, facilities requiring large investments could rapidly become unprofitable (Miljö & Utveckling, 2003). Several actors in the recycling industry still risk to disappear from the market as an effect of El-Kretsen and there is also a risk that El-Kretsen is limiting innovation within the recycling industry (Eriksson, 2003). One way of avoiding this problem might have been to split the contracts into several smaller parts and then a lost contract would not have such a large impact and to set up more long-term contracts (Miljö & Utveckling, 2003).

Other issues

At Ragnsells, it is often difficult to categorise incoming WEEE, mainly due to the fact that it consists of a mix of unsorted waste and that the waste is also containing parts of products (Eriksson, 2003). Many other types of waste have been received, which is not categorised as WEEE, from collection at recycling centres (Eriksson, 2003). In addition, as all appliances that arrive are different, it is difficult to set up an automatic procedure, only manual handling is possible and the work force is specialised on different product groups (Eriksson, 2003). The start up time for a new employee in dismantling is quite long and it takes a lot of education to manually trace for instance hazardous components in 30 different categories (Miljö & Utveckling, 2003).

3.2.4.3 Återvinningsindustrierna – promoting individual direct agreements

The Swedish Recycling Industries' Association (Återvinningsindustrierna, ÅI) is an organisation of Swedish companies working within the recycling field established in 1998, whose member companies representing the main part of the recycling market in Sweden (Återvinningsindustrierna, 2003a).

Approach to collective and individual producer responsibility

ÅI proposes an alternative for producers to take their legislative obligation including a system where local authorities and producers take direct contact with individual recyclers, without using a *material company*²⁹ (ÅI, 2003b). By doing this several companies will set up agreements directly with the recyclers establishing close relationships and the recyclers will offer the solutions for compliance (ÅI, 2003b). ÅI prefers a system based on direct contacts between producers and recyclers developing the market and recycling techniques instead of a collective responsibility with a buyer monopoly, which is not driving the development forward of environmentally adapted technology (ÅI, 2003b). ÅI thinks that the producer responsibility has to be individual and be put on the individual producer to give incentives for the producer to invest in environmentally adapted manufacturing and to contribute to the creation of sound recycling markets with many buyers and sellers (ÅI, 2003b).

As the industry has started to see some problems with El-Kretsen, ÅI sees a change where producers choose to return to setting up individual agreements with recyclers (Helker-Lundström, 2003)³⁰. There are also indications suggesting that the type of solution that

²⁹ In order to fulfill the producer responsibility, the industry has formed so-called material companies, which are often based on a collective service company. This is the case for instance regarding the producer responsibility for glass, paper, packaging and plastics.

³⁰ Annika Helker-Lundström is the Managing Director of Återvinningsindustrierna.

Euroenvironment provides will become more common in the future as several existing recyclers are discussing the opportunity to set up a similar business (Helker-Lundström, 2003). Some small recycling companies have been able to keep their position in the market thanks to direct agreements with producers, and ÅI sees that this is an increasing market especially for producers who want to increase their service level (Helker-Lundström, 2003).

ÅI thinks that material companies will exist in the future but no one will have the same dominant position as the one that El-Kretsen has today, and there will be an increased diversity of different solutions in the future (Helker-Lundström, 2003).

3.2.5 Local authorities

3.2.5.1 RVF – promoting EPR also for historical waste

Svenska Renhållningsverksföreningen (RVF) is an industry organisation within waste management and recycling (RVF, 2003b).

Approach to collective and individual producer responsibility

For RVF, the local authorities have a central role as the waste organiser responsible for collection of domestic waste and for creating infrastructure in the society (Wiqvist, 2003)³¹. The current agreement with El-Kretsen provides a simple and good solution with a clear interface between the local authorities and El-Kretsen (RVF, 2003c). In Elretur, producers are covering the costs for pre-treatment and recycling of WEEE collected at the local authorities while the local authorities organise and operate collection facilities (RVF, 2003a).

At RVF there is concern about the fact that in the current legislation it is possible for producers to “escape” from their responsibility in order to reduce the costs (Wiqvist, 2003). There was a strong reaction from RVF when the TV and radio industry decided to leave El-Kretsen (RVF, 2003a). El-Kretsen then had to cancel their contract with the local authorities from July 1 2003 regarding this product category since the industry no longer would cover the costs for managing the WEEE (RVF, 2003c). The difference is that the local authorities are now responsible for the historical waste from this industry that is not returned to the stores, a cost that was earlier covered by the producers through El-Kretsen (RVF, 2003c). The producers estimate that not more than 10 percent of TV sets and similar products should be returned to the stores and the remaining part will fall under the responsibility of the local authorities (RVF, 2003a). Since the producers will be responsible for the management of all collected historical waste from private households in the WEEE directive, RVF is trying to convince the government and Naturvårdsverket to implement the new regulation as soon as possible (RVF, 2003a).

Other issues

Earlier, the local authorities had taken measures to promote and prepare for the incoming WEEE including for instance the informing of households for almost two years about the WEEE collection, established collection at recycling centres and organised collection at residences (RVF, 2003a). Now, the households should return some WEEE such as TV and radio equipment to the stores when buying a new product while all other WEEE could be returned to the local authority, a situation that might be confusing for the consumers (RVF, 2003a). For RVF, it is important that that collection from households is stable over time and therefore the local authorities are best qualified for taking care of household waste (RVF,

³¹ Weine Wiqvist is the Managing Director of Renhållningsverksföreningen.

2003a). Even though there might be other alternatives for collection of WEEE from households there is a risk that collection rates are low and products are returned at wrong collection points requiring sorting and it is therefore easier to have one central collection point for all household waste (Wiqvist, 2003).

3.2.5.2 RSS – promoting total EPR

Renhållningsförvaltningen Stockholms Stad (RSS) is responsible for taking care of the household waste in Stockholm in an economically and environmentally sound way (RSS, 2003). As many other local authorities, the RSS began to collaborate with El-Kretsen in 2001 and the collection system in Stockholm is based on three recycling centres (Lundkvist, 2003)³².

Approach to collective and individual producer responsibility

According to RSS, local authorities have the cheapest and most cost efficient collection systems today and they will probably always be involved in waste management somehow (Lundkvist, 2003). For RSS, it is important that the authorities look over what they really want with the EPR in Sweden; a total EPR solution where the producers are responsible for all their products on the market and not only according to the old-for-new rule would have been best for the society (Lundkvist, 2003).

A result of the departure of the brown goods industry from El-Kretsen leaving the local authorities with an increased responsibility is that RSS has lost the trust in the producers and confidence in El-Kretsen (Lundkvist, 2003). Even though the new legislation will help solving this problem forcing producers to take more responsibility there will always be some WEEE, which will be under the responsibility of the local authorities (Lundkvist, 2003).

There are opportunities for increased collaboration between local authorities and the industry and it is also possible for producers to create individual agreements with the local authorities for collection via recycling centres (Lundkvist, 2003). However, the local authority collection system could be inefficient if it gets too complex with too many different agreements that need to be administered (Lundkvist, 2003). If the local authorities get more of an entrepreneurial role, a change of attitude among the citizens is needed in order to make it work in practice (Lundkvist, 2003).

Other issues

Separate collection of different waste streams is possible in practice but for RSS the main issue is how to inform consumers about returning their WEEE at different collection points (Lundkvist, 2003). It is a long process to change the consumers' behaviours and the citizens are very conservative regarding waste management (Lundkvist, 2003). There are even more difficulties when the companies are changing their contracts and suppliers (Lundkvist, 2003). In addition, there are not enough resources to control and direct people returning their WEEE (Lundkvist, 2003). The recycling centres in Stockholm, for instance, are receiving about 180 000 visitors per year (Lundkvist, 2003).

³² Nils Lundkvist is the Manager of Renhållningsförvaltningen Stockholms Stad.

3.3 Explaining the UK context

In the UK, the WEEE directive is about to be implemented and this constitutes the first legislation regulating producer responsibility for WEEE in the UK. It is estimated that over 100 000 businesses may be affected by the WEEE directive (Department of Trade and Industry, 2003a). The first phase of the consultation process has recently been completed and the directive will be implemented in the UK legislation by August 13, 2004.

Some important elements of the WEEE directive together with the deadlines for the implementation process of the directive are briefly presented in Table 3.

Important deadlines in the WEEE directive	
13 February 2003	The WEEE directive enters into force.
13 August 2004	EU member states shall bring into force the laws, regulations and administrative provisions necessary to comply with the directive.
13 August 2005	The authorities must have set up systems for collection of WEEE from private households.
31 December 2006	The member states must have achieved an average waste collection rate of 4 kg per inhabitant per year for private households. Member states shall also ensure that producers meet a number of recovery and reuse/recycling targets for different categories of appliances.
31 December 2008	EU establishes new targets for collection, recovery and reuse/recycling.

Table 3 Important WEEE directive elements and deadlines (Source: Directive 2002/96/EC)

3.3.1 Implementation process

The consultation process started with a series of awareness seminars conducted by the Department of Trade and Industry (DTI) during the autumn of 2002 (DTI, 2003a). Earlier this year, DTI published a discussion paper on the government's approach to implementing the WEEE and ROHS directives (DTI, 2003b). The paper requested information and comments from stakeholders such as businesses, users, local authorities, non-governmental organisations, the scientific community and any other parties with an interest in the directives (DTI, 2003b). The stakeholders were invited to respond to the discussion paper, to enable the government to take an informed view on the implementation options (DTI, 2003b). There were 316 responses and some of the findings from the initial consultation phase based on the DTI Executive Summary are further presented below (2003c).

The next formal consultation phase will take place late this autumn and this paper will contain detailed options and the government's view on key areas and should allow a further consultation on the draft regulations next spring before the transposition deadline (DTI, 2003c).

3.3.2 Environmental objectives

The purpose of the WEEE directive (Directive 2002/96/EC) is to prevent WEEE and promote the reuse, recycling and other forms of recovery of WEEE to reduce the disposal of waste. It also seeks to improve the environmental performance of all operators involved in the life cycle of EEE, for instance producers, distributors, consumers and operators directly involved in the treatment of WEEE.

In the directive it is stated that the member states "shall encourage the design and production of electrical and electronic equipment which take into account and facilitate dismantling and

recovery, in particular the reuse and recycling of WEEE, their components and materials” and that they “shall take appropriate measures so that producers do not prevent, through specific design features or manufacturing processes, WEEE from being reused, unless such specific design features or manufacturing processes present overriding advantages, for example, with regard to the protection of the environment and/or safety requirements”³³.

In its consultation document, the DTI (2003a) states that the objectives include reducing the waste arising from WEEE, improving and maximising recycling, reuse and other forms of recovery of WEEE, minimising the impact on the environment of its treatment and disposal. The measures envisaged to achieve these objectives include convincing manufacturers to consider the entire life cycle of their products by promoting eco-design, the use of easily recycled materials and common component and material identification standards to help the identification of materials which are suitable for recycling and reuse (DTI, 2003b).

3.3.3 Main points in the WEEE directive

In this section, the articles in the directive that are considered the most relevant for this study are briefly described. The relevant results from the initial consultation process are also presented to give an up-to-date picture of the ongoing discussions about the implementation.

Separate collection

An overview of the UK interpretation of the directive’s requirements regarding separate collection is presented in Figure 3 (DTI, 2003a).

³³ Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE), article 4, p. 4

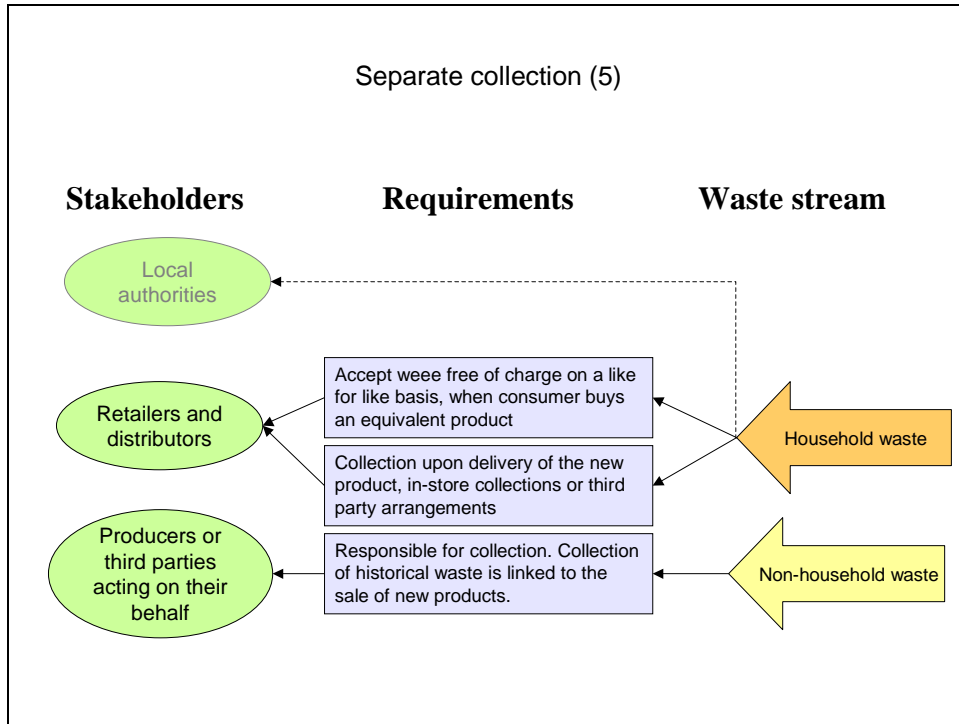


Figure 3 Requirements on separate collection (article 5 in the WEEE directive) (Source: based on DTI, 2003a)

Article 5 outlines the collection facilities that the UK will need to have in place to comply with the directive.

- The UK is required to set up collection systems for WEEE from private households allowing last holders and distributors to return WEEE free of charge.
- Retailers and other distributors are required to accept WEEE from private households free of charge on a like for like basis, when a consumer buys a new product. Retailers may fulfil their obligations through collection upon delivery of the new product, in-store collection or third party arrangements.
- Producers or third parties are responsible for collection of non-household WEEE. For historical waste the collection obligations are linked to the sale of new products.

The results from the consultation show that in terms of retailer take-back the majority of respondents prefer a flexible approach to meet the requirements, rather than mandatory in-store take-back and that retailers' concerns include lack of storage space, waste management handling requirements and possible risks to retail staff (DTI, 2003c). Regarding the overall collection of WEEE, DTI (2003c) claims that the present infrastructure for the collection of WEEE should be maintained and enhanced and that there was general support for the development of local authority civic amenity sites to include WEEE take-back facilities. However, many stakeholders pointed out their concerns about financing the expansion and some local authorities rejected any involvement of the local authority sites and services (DTI, 2003c).

Financing of WEEE from private households and businesses

An overview of the UK interpretation of the directive's requirements regarding financing of WEEE from private households is presented in Figure 4.

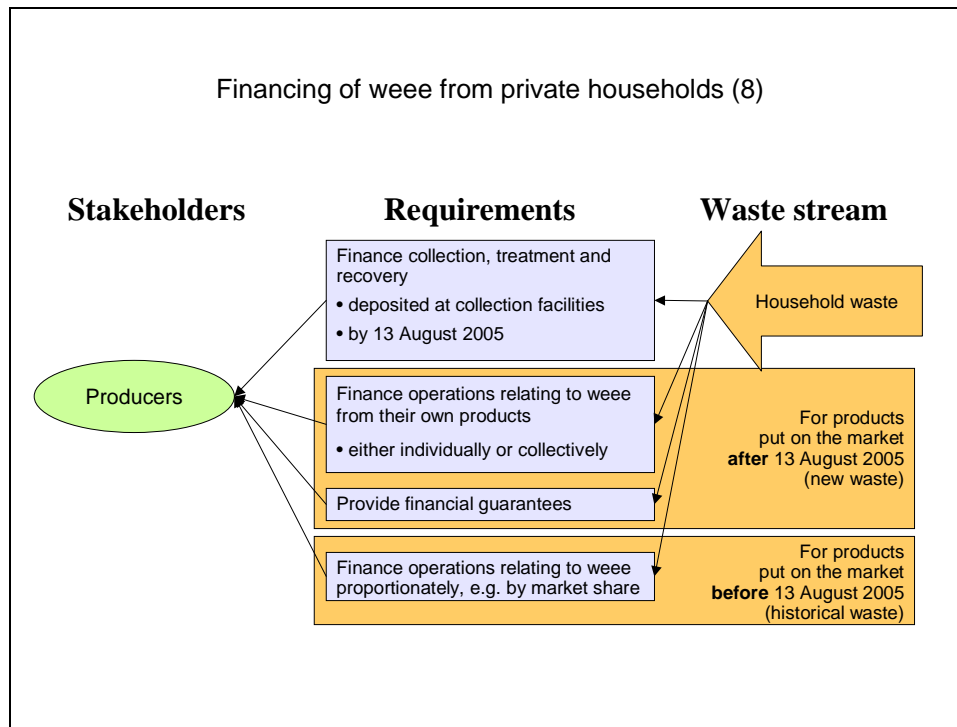


Figure 4 Requirements on financing of WEEE from private households (article 8 in the WEEE directive)
(Source: based on DTI, 2003a)

Article 8 outlines the requirements and options for financing the treatment, recovery and disposal of WEEE separately collected from private households, in particular the obligations placed on producers.

- Producers are required to finance collection, treatment and recovery of WEEE from private households deposited at collection facilities by 13 August 2005.
- For products put on the market after 13 August 2005, constituting new waste, producers are required to finance operations relating to WEEE from their own products either individually or collectively.
- Producers are required to provide financial guarantees for products put on the market after 13 August 2005.
- For products put on the market before 13 August 2005, constituting historical waste, producers are collectively responsible and required to finance operations relating to WEEE proportionately, for instance by market share.

DTI (2003b) introduces two broad methods through which producers could fulfil their obligations; the “own marque” route with financial responsibility for the waste that arises from the their products and the “market share” route of dealing with a proportion of waste related to market share.

An overview of the UK interpretation of the directive's requirements regarding financing of WEEE from businesses is presented in Figure 5.

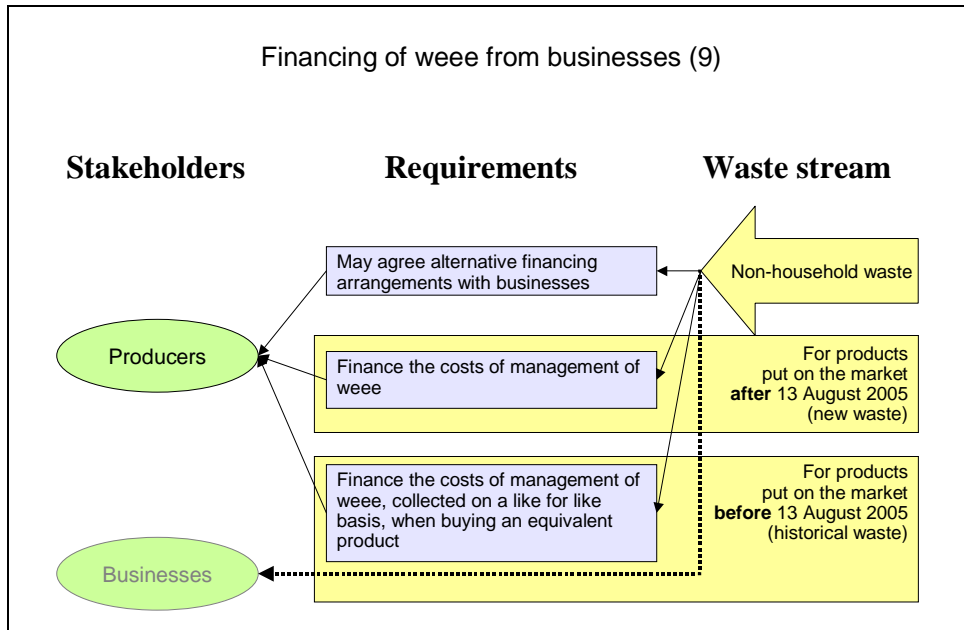


Figure 5 Requirements on financing of WEEE from businesses (article 9 in the WEEE directive) (Source: based on DTI, 2003a)

Article 9 outlines the options for financing the collection, treatment and recovery of WEEE arising from business (non-private household) premises.

- For products put on the market after 13 August 2005, new waste, producers are required to finance the costs of end-of-life management.
- For products put on the market before 13 August 2005, historical waste, producers are required to finance the costs of end-of-life management for WEEE from businesses on a like for like basis when supplying new products.
- Producers and users other than private households may agree alternative financing arrangements.

The results from the consultation show that financing options are complex. In terms of providing financial guarantees for future household WEEE, the majority of the respondents thought that more than one type of guarantee should exist and they have a range of views on what form guarantees should take and who should enforce the system (DTI, 2003c). The respondents had a wide range of views and comments regarding financing the costs of treatment, recycling and recovery of WEEE (DTI, 2003c). Many respondents considered an “own marque” system too complex, although it was recognised that this could lead to greater incentives for eco-design and an implementation of individual producer responsibility (DTI, 2003c).

3.4 UK stakeholders' approaches to implementation

This section includes a presentation of the stakeholders' approaches regarding collective and individual producer responsibility in the UK. The stakeholders are:

- Governments including the Department of Trade and Industry (DTI) and the Environment Agency (EA)
- The EEE industry including the industry organisation Intellect, the British Retail Consortium (BRC) and the European Recycling Platform (ERP) initiative supported by the producers Hewlett-Packard, Sony, Electrolux and Gillette.
- Examples of third party service providers including Fonebak and Transform
- The waste treatment industry including the Industry Council for Electronic Equipment Recycling (ICER), the UK Centre for Economic and Environmental Development (UK CEED) and the Calyx Group
- The local authorities represented by the Local Authority Recycling Advisory Committee (LARAC) and the Local Government Association (LGA)

3.4.1 Government

3.4.1.1 DTI – relies on industry decisions

The Department of Trade and Industry (DTI) is primarily responsible for the WEEE directive in the UK and works with its implementation together with the Department of Environment, Food and Rural Affairs (DEFRA) (DTI, 2003b). The reason why DTI has lead responsibility is that the directive is not just about the environment but has the industry in focus (Lunnon, 2003)³⁴.

Approach to collective and individual producer responsibility

DTI thinks that the industry has to find their own solutions to meet the requirements of the legislation and that it is up to the individual company to decide if it will do it together in a group or alone (Lunnon, 2003). Most stakeholders prefer collective schemes to keep down costs especially the SMEs with no own economies of scale and they expect it will be possible to choose a collective scheme (Lunnon, 2003). DTI favours a market share or shared responsibility approach before an own marque or individual responsibility either through a single market share scheme or, a number of schemes, as with the packaging regime (ENDS Report, 2003a). The view of DTI is that a collective system is possible as long as it does not hinder the development of other solutions and the involved are content with the solution (Lunnon, 2003).

DTI has no particular view on the financing arrangement regarding the individual EPR for new waste (Lunnon, 2003). The involved stakeholders should have a freedom to choose the route that is right for them in order to minimise the economic administrative burden (Lunnon, 2003). For DTI, it is important to find a solution with a balance between maximising the environmental benefits and not putting too heavy burden on individual companies (Lunnon, 2003).

³⁴ Andrew Lunnon is working with the WEEE and ROHS directives at the Sustainable Development Directorate at DTI.

Regarding recovery and recycling targets, DTI says it would be too complex if obligations were put individually on each business for each product they market (ENDS Report, 2003a). Therefore the targets set for each of the product categories could be placed jointly on the producers responsible for the products in each category for instance based on the market share of each producer for the whole category (ENDS Report, 2003a).

Other issues

DTI expects that producers are involved in the consultation process and that they are active but it is a challenge to get people engaged in the implementation process (Lunnon, 2003). DTI has recently finalised the analysis of the first consultation with more than 300 responses and a second consultation process including more detailed implementation options and statements with government's preferences will take place in late autumn (Lunnon, 2003). The major risks with the implementation include keeping the timetable since the schedule to get the infrastructure in place in detail is tight and assuring enough capacity for handling the incoming WEEE when the legislation enters into force (Lunnon, 2003).

As the UK already has a waste management system today that is functioning quite well, the future system will be much based on the current infrastructure (Lunnon, 2003). DTI states that "although the directive does not impose duties directly on local authorities, it makes sense for us to build on existing infrastructures wherever possible and to use civic amenity sites and other collection mechanisms where appropriate"³⁵. In addition, since DTI believes that the UK already meets the collection target of 4 kg, it wants current collection methods for instance bulky waste collections and retailer take-back on delivery of new equipment to continue (ENDS Report, 2003a). The main things for DTI to take into consideration are the role of the local authorities in collection, the concerns of the retailers about take-back in stores and specific concerns of SMEs for instance how to avoid putting a large burden on small retailers such as a news agent selling torches and toys (Lunnon, 2003).

3.4.1.2 The Environment Agency – more responsibility on the industry

The Environment Agency (EA) is responsible for administration of EPR related issues (Cooper, 2003)³⁶ and will be the enforcement authority for the WEEE directive (Better Regulation Task Force, 2003).

Approach to collective and individual producer responsibility

From the EA's perspective, it is totally up to the industry to decide how to meet the requirements (Cooper, 2003).

Today, the EA is responsible for enforcement of regulation and has a large role in the packaging legislation (Cooper, 2003). Regarding the WEEE legislation, the EA does not want a role as large as in the packaging and claims that the industry should have more responsibility and the authorities less (Cooper, 2003). About 30 people are working with packaging related issues but with the WEEE legislation the EA hopes that as much as possible should be put on the industry (Cooper, 2003). The EA expects that the registering and monitoring will include a huge amount of work as the whole industry is affected by the legislation (Cooper, 2003). The EA prefers not to be involved in the initial state of creating a register, as it is preferable that the industry can agree upon a system itself but only help

³⁵ DTI, 2003b, p. 27

³⁶ Jeff Cooper is Producer Responsibility Manager at the Environment Agency.

structuring a system if needed (Cooper, 2003). In line with the approach to let the industry decide about best solutions, it also has to decide how to deal with collective and individual schemes (Cooper, 2003). The major challenge for the UK is to set up a system which is effective regarding cost and which is fair to producers (Cooper, 2003).

Other issues

The EA hopes that there will be an increased focus on environmental benefits in the future after the system has been set up and the targets have been reviewed and achieved (Cooper, 2003). One issue is to find out how to handle the small items and if it is worth segregating these (Cooper, 2003). It is important to look at the environmental advantages of segregating equipment especially as it might not be worth separating small items with for instance little metal content (Cooper, 2003).

3.4.2 The EEE industry – manufacturers and retailers

3.4.2.1 Intellect – an overall industry-based umbrella scheme

Intellect is the trade body for the information technology, telecommunications and electronics industry in the UK incorporating 1 000 members (Intellect, 2003a). The directive affects about 600 of its members (Ollis, 2003)³⁷.

Approach to collective and individual producer responsibility

Earlier this year, members of Intellect and Association of Manufacturers of Domestic Electrical Appliances (AMDEA) took an initiative to conduct an independent study to investigate options for implementing the WEEE directive in the UK (Intellect, 2003b). The background of the study is that member companies had identified a number of ways to fulfil their responsibility and wanted to further investigate these options (Intellect, 2003c). It was concluded that the greatest advantage for the industry would be achieved through an overall industry-based umbrella scheme designed to maximise control over all aspects of WEEE including collection, establishing recycle contracts, issuing compliance certificates and working with the regulators on registration schemes to deal with freeriders (Intellect, 2003b).

Since the result showed that it is desirable that the industry is controlling one single system with involvement of third parties, Intellect had to decide how to continue the work; either conduct another more in-depth study, try to set up a scheme on paper or explore other opportunities (Ollis, 2003). At the end of July, Intellect revealed that “a number of Trade Associations led by Intellect are looking to establish an industry-led company to handle the manufacturers/producers' obligations under the WEEE Directive”³⁸ (Intellect, 2003a).

Other issues

For Intellect, it is important that the WEEE directive is implemented in the most equitable way with regard to the interests of the environment, consumers and other stakeholders (Intellect, 2003c). It is also important that the industry is involved in the legislative implementation process (Ollis, 2003) and IT managers and directors need to start to work together as soon as possible (Computer Weekly, 2003). Another concern is the lack of

³⁷ Dudley Ollis is Programme Manager within Environmental Services at Intellect UK.

³⁸ Intellect News: Disposal controls threaten dumping disaster, 29/07/03 (Intellect, 2003a) Available: http://www.intellectuk.org/press/news/news_29_07_03b.asp

infrastructure to handle large scale WEEE recycling in the UK, and Intellect is emphasising to the government to do more on this issue (Computer Weekly, 2003).

3.4.2.2 The ERP initiative – supports individual producer responsibility

The European Recycling Platform (ERP) is supported by four leading manufacturers, Electrolux, Gillette, Hewlett-Packard and Sony, which together represent 14 percent of the WEEE coming back from the European market (ENDS Report, 2003b).

Earlier this year, the group presented a number of principles for the implementation of the directive with the purpose to ensure national legislation remains consistent with the directive and to secure economies of scale and operational efficiency (ENDS, 2003a).

The main points in the concept include (ENDS, 2003a):

- To implement individual producer responsibility
- To establish national registers that record companies, which are placing products on the market and their levels of responsibility
- To develop guidelines on financing future waste.
- The creation of common logistics interface to ensure operation of competitive take-back schemes

Approach to collective and individual producer responsibility

The companies want the freedom to collect and recycle their own appliances and support an own marque system or individual producer responsibility (ENDS Report, 2003b). They want to avoid systems in which producers have to belong to a single compliance scheme and pay a mandatory fee on new products for the recycling of historical waste (ENDS Report, 2003b).

The companies also support the idea of letting the industry establish non-profit clearing-houses, which would be mandated by the government, to draw up a register of producers and prepare responsibility allocation protocols from their annual sales and market share data for different categories of equipment (ENDS Report, 2003b).

They mention that there is a need for a common coordination function for the logistics infrastructure, which could be run by industry acting as a common logistic interface between public collection points and individual or collective recycling systems, and should be integrated in the national clearing-houses (ENDS, 2003a). They emphasise that WEEE management contracts should be made between producers and service providers directly and that the clearing-houses should not be involved in the purchasing of recycling services or operate recycling systems (ENDS; 2003a).

The companies also mean that producers should not be made responsible for the household collection of WEEE and that producers should be allowed to select the most suitable instrument for the financial guarantee (ENDS, 2003a).

Other issues

Hewlett-Packard has expressed concern about setting too high collection targets in the future because the more waste is collected the more higher costs that the producers have to pay (Letsrecycle, 2003a).

3.4.2.3 BRC – reluctant to in-store take-back

The British Retail Consortium (BRC) is representing 90 percent of the retail trade sector in the UK (Letsrecycle, 2003b).

Approach to collective and individual producer responsibility

In its response to the consultation paper, BRC stresses that its members are reluctant to implement take-back schemes as stated in the directive (Letsrecycle, 2003b). The BRC thinks that this option may provide the worst environmental option because of the additional pollution due to the transportation (Letsrecycle, 2003b). It says that the local authorities, which already have infrastructure and experience, should develop WEEE collection routes instead (Letsrecycle, 2003b).

Other issues

Retailers argue that they lack the space, that there are health and safety risks, that waste collection is not their area of expertise and that some retailers would have to reorganise their logistics operations (ENDS Report, 2003c). They also think that the best approach would be to allow maximum flexibility for meeting their obligations to suit the wide range of needs of different retailers (ENDS, 2003b).

BRC also expresses concerns on the effects of reaching too high collection rates as the larger volumes are collected, the more the retailers have to pay (ENDS Report, 2003c).

3.4.3 Third party service providers

3.4.3.1 Fonebak

Fonebak is a nationwide scheme for take-back and recycling or refurbishing old mobile phones launched in September 2002 by the refurbishing company Shields Environmental and backed by all network operators including O2, Orange, T-mobile, Virgin Mobile and Vodafone, and the major phone retailers within Dixon's group (ENDS Report, 2002b). No mobile phone manufacturer is yet involved in the scheme (ENDS Report, 2002b).

The aim of the scheme is to recycle the 15 million mobile phones, which are replaced every year and the scheme was the first to comply with the WEEE directive (Fonebak, 2002).

Approach to collective and individual producer responsibility

Fonebak is well placed to become a compliance scheme for recycling WEEE but it will depend on how the implementation develops (ENDS Report, 2002b).

Other issues

Through the scheme, customers can return old equipment directly to the stores all over the UK and they can also collect an envelope and post items to the recycling centre (ENDS Report, 2002b). The scheme provides a chance to improve both sales and the retailers' reputations and many of the stores offer for instance vouchers or charitable donations for customers who return an old phone when buying a new one (ENDS Report, 2002b).

Shields Environmental claims that Fonebak shows good results both regarding collection and recycling (ENDS Report, 2002a).

3.4.3.2 Transform

Three companies, Endeve, Biffa and European Metal Recycling (EMR), which are market leaders in the logistics, waste and recycling industries have joined their forces to develop a national compliance scheme for companies affected by the WEEE directive (Transform, 2003).

Endeva is a distribution and after-sales service business with clients among large manufacturers, retailers and insurance firms, Biffa will collect appliances from businesses civic amenity sites and retailers and EMR will carry out the separation, treatment and recycling of appliances (ENDS Report, 2003d).

Approach to collective and individual producer responsibility

The precise form of Transform is still to be decided (ENDS Report, 2003d) but the partners are consulting with potential customers in order to ensure the development of product offerings that are meeting the different needs of producers, retailers and importers (Biffpack, 2003).

Other issues

The companies emphasise that the Transform scheme will carry out collection, treatment and recovery itself instead of acting as an interface between producers and recyclers (ENDS Report, 2003d). It will also make recycling easier for local authorities and consumers as a range of services will be considered, including enhanced segregation at civic amenity sites and special envelopes allowing householders to post small items for recycling (Biffpack, 2003).

3.4.4 Waste treatment industry

3.4.4.1 ICER – emphasises flexibility for producers

The Industry Council for Electronic Equipment Recycling (ICER) is a membership association reflecting the views and interests of different parts of the supply chain: material suppliers, manufacturers, retailers, the waste industry, local authorities, and consumers (ICER, 2003). ICER serves as a source of knowledge and expertise of WEEE issues for its members and addresses a broad range of measures affecting EEE (ICER, 2003).

Approach to collective and individual producer responsibility

In its response to the consultation paper, ICER emphasised the need for flexibility in several areas including funding, collection, collective schemes and visible fees (Letsrecycle, 2003b). ICER suggests that the government takes the least regulatory approach and that producers should be able solve its obligations in a way which suits them best (Letsrecycle, 2003b).

Other issues

In an update of the ICER 2000 report of WEEE processing and recycling commissioned by ICER, the interim results confirm that the UK is already exceeding the collection target of 4 kg per person but also that the UK is not yet reaching the recycling targets (Letsrecycle, 2003c). The amount of collected waste equates to around 7.83 kg per head and the main method of separate collection for the household WEEE looked at were civic amenity sites, distributor take-back and specialised collections (Letsrecycle, 2003c). The preliminary

findings from the study also suggested that there were doubts over whether the local authority infrastructure would be in place in time, because of the amount of work that needs to be done and the question of who will pay for this (BRTF, 2003).

Regarding recovery and recycling targets, ICER has suggested that recyclers should be required to demonstrate that they could meet the recycling targets for different categories of equipment in order to get an operating permit (ENDS Report, 2003c). Producers could demonstrate this by proving that they had sent equipment to an authorised facility or through contracts with recyclers to ensure that recovery and recycling targets are met (ENDS Report, 2003c).

3.4.4.2 UK CEED – exploring best practices in pilot project

The UK Centre for Economic and Environmental Development (UK CEED) is an independent, not-for-profit research centre working in partnership with business, government and the voluntary sector to encourage adoption of environmental standards in their activities (UK CEED, 2003). It undertakes research, develops policy, implements technology demonstration projects and carries out a wide range of engagement and education activities with partners in the UK and across Europe (UK CEED, 2003).

UK CEED has set up a project for identifying best practice options for collecting, processing and remanufacturing/recycling of WEEE together with Hewlett Packard, Peterborough City Council and a number of private and public sector partners (UK CEED, 2003). It includes analysing what data can be generated and at what cost, how the costs of processing and remanufacturing/recycling activities may be most effectively allocated between different parts of the supply chain and assessing markets for recycled materials (UK CEED, 2003). The project will be integrated into the development of the physical WEEE facility of Peterborough City Council (UK CEED, 2003). Peterborough City Council was awarded £266,000 from the Department of the Environment, Food and Rural Affairs (DEFRA) to establish the WEEE reprocessing facility (Peterborough City Council, 2002). The facility is operational from June 2003 and will provide separate collection services for WEEE from domestic properties and retail stores (Encluster, 2003). It is important to note that Hewlett Packard is only financially supporting the research project and is not involved in the Peterborough facility as such (Knowles, 2003)³⁹.

Approach to collective and individual producer responsibility

The main focus of the project is to find the most cost effective solution and the expected outcome is to get results showing what solution is preferable and what is feasible in practice (Knowles, 2003). Different collection routes are analysed for instance local authority collection at home or at civic amenity sites and retailer take-back (Knowles, 2003). The major challenges identified in the project are how to handle small items, the attitude to waste among people in general and the retailers' attitude to collection (Knowles, 2003).

³⁹ Hugh Knowles is Senior Project Officer at UK CEED.

Other issues

It is important to get the retailers involved in the project but this seems difficult as they have already set up contracts with third parties and see difficulties in changing partners just to send their WEEE to the city council (Knowles, 2003). The ongoing collection pilot project will be followed by the reprocessing part and reporting to Hewlett Packard will follow during the autumn (Knowles, 2003).

In general, there are few sites that can take care of WEEE in the UK (Knowles, 2003) and the facility of Peterborough City Council is the only local authority WEEE facility in the UK (UK CEED, 2003).

3.4.4.3 The Calyx Group – offering a total WEEE solution

The Calyx Group consists of Electroversal, operating environmentally sound repair refurbishment and recycling services for manufacturers of IT and telecommunications equipment, Weee Recycle Limited, offering a complete WEEE solution including repair, refurbishment, recycling and disposal backed up with the logistical support and Weee Sellspares Limited, which offers refurbished spare parts for hard-to-get-hold-of or expensive parts (Electroversal, 2003).

Approach to collective and individual producer responsibility

Earlier this year, the Calyx Group had a targeted marketing campaign to raise the awareness about the EU directives and its services to help the manufacturers comply (Calyx Group, 2003). Through Weee Recycle Ltd, it offers a total WEEE solution to help those affected by the directives to comply and dispose of their waste equipment in an environmentally sound way (Calyx Group, 2003). Weee Recycle's plans also include providing information and guidance to customers on the development of the legislation and its implications (Local Authority Waste & Environment, 2003).

The main focus in the industry is on cost efficiency and it is still an open question what will be the best solution in practice for companies to comply with the future legislation (Morrell, 2003). However, it is positive for Calyx Group that the government is emphasising the need for independent solutions to stimulate competition and that many manufacturers are reluctant to collaborate with competitors especially in the IT sector, which drives individual responsibility (Morrell, 2003). Calyx Group is hoping that there will be room for specialists in the future especially in business waste management (Morrell, 2003).

Other issues

Among the potential customers that the Calyx Group have been in contact with, many seem to be waiting for everybody else to make a first move and avoid making large investments before they know what the legislation will look like (Morrell, 2003)⁴⁰. The Calyx Group has identified a number of business opportunities related to the directive but is taking a large risk as much is still unknown about the future legislation (Morrell, 2003).

⁴⁰ John Morrell is the Strategic Director of Calyx Group.

3.4.5 Local authorities

3.4.5.1 LARAC – strongly against obligatory involvement

The Local Authority Recycling Advisory Committee (LARAC) is the leading national local authority organisation promoting waste reduction and recycling (Local Authority Recycling Advisory Committee, 2003a).

Approach to collective and individual producer responsibility

In its response regarding WEEE from private households in the consultation paper, LARAC expresses that a single compliance scheme based on for instance market share would be feasible for local authorities to deal with, but if producers for every product type expected their own waste to be segregated and stored, it would be more difficult for the local authorities in terms of sorting and land use (LARAC, 2003b).

Other issues

In its interpretation of the WEEE directive, LARAC (2003c) says that the local authorities do not have to provide a collection service for WEEE though it is encouraged and that the directive does not require producers to finance the recovery of WEEE before it reaches collection facilities. This means in practice that if a local authority wishes to separately collect WEEE it cannot automatically expect a producer to pay for any cost associated with separation or storage (LARAC, 2003c).

In general, LARAC is strongly against any obligatory involvement in WEEE collection of the local authorities and supported the strict producer responsibility laid out in the directive but recognised that some local authorities may wish to participate (Letsrecycle, 2003b). It is open to the suggestion that local authority collection systems for instance civic amenity sites and kerbside collections could form part of the collection infrastructure, as long as producers cover both collection and treatment of WEEE (Letsrecycle, 2003b; LARAC, 2003b). LARAC (2003c) lobbies for the fullest producer responsibility obligations possible to ensure that the cost and financial pressure is realised by producers and to ensure that no additional burdens are placed on local authorities.

3.4.5.2 LGA – supports voluntary involvement

The Local Government Association (LGA) represents the interests of local authorities, which have waste collection, waste disposal, and waste planning responsibilities in England and Wales (Local Government Association, 2003a).

Approach to collective and individual producer responsibility

In its response to the consultation paper, the LGA emphasises the importance of incorporating incentives in the legislation aimed at ensuring the removal of WEEE from the household waste stream (LGA, 2003b).

LGA also mentions that it is not likely that one single collection method will be able to achieve compliance with the requirements and that an expansion of the current mix of collection systems may be required (LGA, 2003b). LGA favours retailer take-back over kerbside collections because kerbside collection by local authorities would represent an expensive means of collection (Letsrecycle, 2003b). In addition, it suggests bring banks in electrical retailers' car parks and facilities in civic amenity sites where necessary resources especially space can be met (Letsrecycle, 2003b).

Other issues

The LGA also stresses that any role taken by local authorities would be voluntary and funded under producer responsibility (Letsrecycle, 2003b). It emphasises that local government has a long-established role in relation to household waste and operating collection systems and that they are fully prepared to play a role in helping to deliver the objectives of the directive but that the producers should be responsible according to the legislation (LGA, 2003a).

The LGA also mentions that it has to be borne in mind that the type of collection system will have a major impact on whether items can be reused (LGA, 2003b).

3.5 Overview of stakeholders' approaches

In this section, an overview of the different stakeholders' approaches to collective and individual producer responsibility is presented together with an explanation of the interests behind these approaches. This overview is showing a pattern of how the stakeholders relate to the implementation of the EPR programme.

3.5.1 In Sweden

The Swedish **authority**, Naturvårdsverket, is keeping a neutral position and expects that the industry is active taking its own initiatives. However, based on experience from the current system it has identified some advantages and drawbacks with different approaches.

From the industry perspective, **producers and retailers** support a number of different approaches. However, the majority are still members of El-Kretsen. Siba chose to leave El-Kretsen and has set up an individual system for take-back in their stores mainly because the collective system turned out to be too expensive. Dell has complemented its El-Kretsen membership, which assures compliance with legislation, with an alternative third party solution provided by Euroenvironment, in order to meet specific customer demands. El-Kretsen is supposed to give compensation to Dell for the volumes handled by Euroenvironment. Ikea has low collection rates in its individual collection system based on in-store take-back, although it is increasing their efforts in providing information to its customers. Fujitsu Siemens has recognised that the membership of El-Kretsen has turned out to be more expensive than expected and that it might be interesting to explore other third party alternatives.

The **industry organisations** are representing their members who may have different approaches. Both IT-företagen and Teknikföretagen emphasise that it is important that the member companies make own decisions about what approach to adopt and has therefore not stated any particular view on the issue. However, most of IT-företagen's members have joined El-Kretsen and IT-företagen is also one of the owners of El-Kretsen. Teknikföretagen is supporting the Orgalime position regarding the compatibility of individual producer responsibility and collective schemes related to the WEEE directive discussion. For MTB's members, El-Kretsen offers the best solution and MTB is also one of the owners of El-Kretsen.

Regarding the **third party service providers**, El-Kretsen and Euroenvironment have adopted two different approaches to help the companies comply with the legislation. El-Kretsen is based on an overall industry collective system for gaining large-scale advantages when handling large volumes. The members are also permitted to have alternative complementary

solutions at the same time. The Euroenvironment service offerings are mainly focused on the IT industry and on fulfilling its members' needs through individual collection solutions.

In the **waste treatment industry**, focus is on setting up individual agreements with producers. HA Industri sees opportunities in providing total solutions covering all waste streams occurring in its customers' businesses. Ragnsells could not manage to renew its contract with El-Kretsen due to tough price pressure during the negotiations, and sees now opportunities in setting up direct contracts with business customers. ÅI strongly promotes the importance of direct agreements between recyclers and producers supporting individual responsibility in order to stimulate the development of the recycling industry, both from an economic and environmental perspective. The waste management industry seems to want competition and avoid being too dependent on one compliance scheme.

The **local authorities** are promoting that the producers should have more responsibility than what is stated in the current legislation to avoid the risk that some of the producers' responsibility is transferred to the local authorities. RVF is supporting the collaboration with the industry through Elretur and is also concerned about the hole in the legislation that has been used by some producers. RSS promotes a total EPR approach where producers are responsible for all products they put on the market instead of only using the old-for-new rule.

3.5.2 In the UK

The **governmental stakeholders** think that it is up to the industry to decide how to meet their obligations. DTI emphasises that the individual company can decide if it will join a collective scheme or set up an individual solution. At the same time it favours shared responsibility or a market share approach and means that a collective scheme is possible as long as it does not constitute a barrier for other solutions. For EA it is important that the industry can decide about what is best for it and that the industry can handle much of the administration by itself so that EA does not have to be too much involved.

Within the **EEE industry**, initiatives have been taken to explore different solutions for how to comply with the legislation. The study supported by Intellect concluded that the greatest advantage for the industry would be achieved through an overall industry-based umbrella scheme designed to maximise control over all aspects of WEEE. The companies behind the ERP initiative are supporting individual producer responsibility and have presented the idea of an industry led clearing-house for monitoring based on a national register. The members of BRC are reluctant to in-store take-back due to lack of space and health and safety risks, and propose that the local authorities are better suited with existing infrastructure and expertise for collecting WEEE.

Potential **third party service providers** are also exploring different approaches to offer services to customers who will need to comply with the legislation. The existing Fonebak scheme is based on that the mobile phone retailers and operators collectively collect and recycle the WEEE, in order to improve sales and reputation. The idea of the Transform scheme, supported by three important waste management companies, is to meet different customers' demands and to provide a total solution for compliance with the legislation, carried out directly by the partner companies.

For the **waste treatment industry**, it is important that there will be room for different solutions in the future and that the producers can decide themselves how to solve their obligations. ICER emphasises the need for flexibility for producers and suggests that the

government takes the lightest regulatory approach to let the producers to solve its obligations in a way, which suits them best. UK CEED is running a project for identifying best practice options for WEEE management including evaluation of different approaches, to find the most preferable solution and to see what is feasible in practice. The Calyx Group has developed a concept for total WEEE management and is hoping that there will be business opportunities for specialists in the future.

The standpoint of the **local authorities** is to avoid any statutory obligations and that the costs should be covered by the producers. LARAC is strongly against obligatory involvement of local authorities in the producers' responsibilities and favours collective schemes to avoid costs for separation and storage. LGA supports voluntary involvement of the local authorities as long as the producers are responsible for the WEEE covered in the legislation.

3.5.3 Common patterns for stakeholder groups

Both in Sweden and in the UK, the authorities seem to be taking a neutral position regarding collective and individual producer responsibility expecting the industry to decide how to comply with the legislation. Still, they seem to express some of their preferences in order to serve as a guiding body for the industry. Another common factor is that they seem to be interested in being as little involved as possible in the actual operation of the EPR programme, leaving the responsibility to the industry itself.

In the EEE industry in the two countries, manufacturers and retailers seem to explore different types of EPR approaches. Among the large manufacturers in both Sweden and the UK there seems to be a specific interest for exploring options of individual producer responsibility. An interesting difference is that the retailers in the UK seem to be reluctant to in-store take-back while several retailers in Sweden have found it more interesting to set up individual schemes including in-store take-back. In Sweden, it seems difficult to achieve high collection rates for the individual solutions and this approach may be adopted as a means only to reduce costs. The industry organisations representing members of the industry seem to leave the decisions to the individual members. However, the organisations may have a role in taking the lead for guiding the industry in some cases.

The third party service providers also seem to explore how to develop suitable approaches for compliance depending on the needs of the industry. In Sweden, the industry has created a collective scheme with a dominant position but which permits producers to explore alternative solutions. Still, other service providers seem to meet difficulties when trying to set up alternative schemes for meeting specific customer needs in Sweden. In the UK, service providers seem to have identified opportunities in setting up collective schemes.

For the waste treatment industry in both countries it seems to be important that there is room for different types of solutions based on individual agreements and specialised services to meet specific demands of the producers. It seems like the recyclers want to avoid being dependent on one single collective scheme, as is the case in Sweden. With more individual producer responsibility, there also seems to be better opportunities for the development of the recycling industry.

For the local authorities in both Sweden and the UK, it seems important to avoid that part of the producers' responsibility is transferred to the local authorities. They seem to be willing to be involved under the condition that the producers can compensate them for their costs related to the management of WEEE covered in the legislation. They also seem to prefer

collaboration with the industry organised through one collective scheme to facilitate physical management of products and administration.

4. Discussion

This chapter includes a discussion about the environmental effectiveness of the stakeholders' approaches to collective and individual producer responsibility as compared to the stated environmental objectives of the EPR programmes. After the discussion follows a summary of the evaluation.

This section explores how the stakeholders' approaches may contribute to achieve the environmental objectives of the implementation of the EPR programmes, constituting one of the research questions.

First the environmental objectives of the two programmes are evaluated against the waste management hierarchy. An analysis of the different approaches follows examining the fulfilment of the environmental effectiveness through the respective approach.

Although the system in Sweden has been in place for about two years, it is under revision in order to be consistent with the WEEE directive. In the UK, the programme is not yet in operation. Therefore, besides the current status in the two countries, i.e. the current implementation of the Swedish EPR ordinance and WEEE management practice in UK, the approaches envisioned by various stakeholders are the primary objects of the analysis.

4.1 Stakeholder approaches and environmental effectiveness

Below follows a discussion on how different stakeholder approaches may influence the environmental effectiveness of the EPR programmes in Sweden and the UK.

4.1.1 Review of the environmental objectives

The objectives of the two programmes are briefly repeated below:

- **Sweden:** create incentives for producers to develop EEE with less environmental impact, adjust them for increased recycling and achieve an environmentally sound waste management when the products are disposed (Producentansvarsutredningen, SOU 2001:102)
- **UK:** reducing the waste arising from WEEE, improving and maximising recycling, reuse and other forms of recovery of WEEE, minimising the impact on the environment of its treatment and disposal (DTI, 2003b).

It is clear that the waste management hierarchy has been used for setting the objectives for the implementation of the two EPR programmes. Prevention at source seems to have a high priority and recycling a central role in both cases. Reuse seems to be expressed more explicitly in the UK than in Sweden. Both programmes also incorporate improving the environmental performance of waste management actors for treatment and disposal.

Both set of objectives seem to correspond to the objectives of the WEEE directive, which are prevention of WEEE, promotion the reuse, recycling and other forms of recovery of WEEE to reduce the disposal of waste and improvement of the environmental performance of all operators involved in the life cycle of EEE.

The discussion below is categorised according to the following objectives; prevention and incentives stimulating eco-design, increased reuse, recycling and recovery, reduced disposal and improve environmental performance of involved operators.

4.1.2 Prevention and incentives stimulating eco-design

This section includes a discussion on how the different stakeholder approaches may contribute to the achievement of the objective of increasing waste prevention and incentives for eco-design. Important factors for achieving the objective include for instance the extent to which there is a clear feedback loop to producers regarding end-of-life management costs, the level of control at collection of waste and feasibility of sorting and separating of products according to specific brands.

Sweden

The way the Swedish programme is working today, where the large majority of producers are members of El-Kretsen, does not seem to include any incentives for environmental improvements in product development and the objective may be seen as a long-term goal for the industry to strive towards.

Under El-Kretsen, the industry is collectively responsible for the collected WEEE. There is no differentiation system on fee structures between environmentally adapted products and conventional ones, and the producers within a product category are jointly sharing the costs for managing the products within that category based on market share. There are therefore limited incentives for producers to develop more environmentally adapted products than the rest of the industry.

Within the Elretur collaboration, the waste collected through the local authorities is mainly mixed. This may be limiting the opportunities for eco-design, as a lot of resources for sorting and storage would have been required to separate the waste to support individual responsibility. With the industry's establishment of El-Kretsen, the number of actors that both Naturvårdsverket and the local authorities have to deal with is also limited, facilitating the administration of the system.

Even though the majority of the industry is member of El-Kretsen, the increasing interest among its members to explore alternative solutions, including more individual responsibility, may lead to increased opportunities for waste prevention. It is important to note that the retailers' in-store take-back could be considered as individual responsibility for instance in the case of Siba, but that retailers may not have any incentives for directly promoting eco-design, which is more related to manufacturers. In addition, the products that are returned to retailers according to the old-for-new rule do not necessarily have to be of their own brands.

The initiative of Euroenvironment, focusing on specialised services for its customers, for instance EEE manufacturers, may contribute to more opportunities regarding individual responsibility. Through specialised services it may also be easier to control the collected waste, making it easier to sort for customers wanting individual responsibility. The direct agreements and specialised services within the waste treatment industry may also contribute to controlled waste collection and increased opportunities for individual responsibility.

UK

In the UK, it seems too early to determine how incentives for prevention will be formed in practice. In the WEEE directive, regarding financing of WEEE from private households, it

is stated that each producer shall be responsible for financing the operations relating to the future waste from its own products. The producer can choose to fulfil this obligation either individually or by joining a collective scheme. With the incorporation of individual producer responsibility for products sold in the future, manufacturers may get an incentive for eco-design as individual companies will benefit from their own efforts. It is however still not known how producers will choose to fulfil this obligation in practice.

With a market share approach, the authorities may ensure a limited number of actors to deal with. However, there may be more opportunities for waste prevention in a system based on an own marque approach.

Within the industry, the support of individual responsibility for instance by the ERP initiative may lead to opportunities for waste prevention while the collective approach supported by for instance Intellect may be limiting the opportunities for preventative incentives. The approach of the large manufacturers in the role of industry leaders may have an important impact on the rest of the industry.

Among the third party service providers, a collective approach may make it difficult to stimulate waste prevention while more customised services may give increased opportunities for preventative incentives. Prevention may also be supported through specialised services within the waste treatment industry.

The approach of some local authorities favouring collective schemes to avoid costs for separation and storage may be limiting the opportunities to create incentives for eco-design. The collection of mixed waste may also limit waste prevention. The local authorities that do not want to be involved at all may contribute positively to waste prevention, because the industry then has to find other ways of collecting the waste, which may include better opportunities for eco-design incentives.

4.1.3 Increased reuse, recycling and recovery

This section includes a discussion about how the different stakeholder approaches may contribute to achieving the objective of increasing reuse, recycling and recovery. Important factors for achieving the objective include for instance the quality level of waste, the level of control at collection, the size of volumes and negotiation power of the EEE industry.

Sweden

Recycling is a central element in the Swedish regulatory framework. Although reuse is to be preferred before recycling there could be a greater focus on this in the current programme.

The collection system within El-Kretsen is based on an open system. At the recycling centres, often situated outdoors, the waste is exposed to weather conditions reducing the quality of the returned products. The outdoor conditions may limit the quality of the WEEE reducing the opportunities for reuse. Also, lack of supervision of people returning their waste may have negative influence on the product quality. There is therefore a limited potential for reuse within Elretur. As it may be difficult to control and administer the programme if there are too many actors involved, the authorities support the El-Kretsen collaboration even though it is not leading to increased reuse. However, El-Kretsen may contribute to increased recycling, as it can, by its strong buyer position and expertise in the recycling industry, put pressure on the recyclers and require for instance improved quality and recycling rates.

Specialised solutions supported by for instance Euroenvironment and the waste treatment industry may improve the conditions for reuse, if the collection method can assure high waste quality. Euroenvironment strives for indoor collection and control of the waste early in the collection process. The retailers' in-store take-back may also contribute to increased potential for reuse as the collection method often has a high level of control. However, some producers with individual agreements and strong negotiation power may also be able to put pressure on recyclers to improve recycling rates. Right now, as the programme does not include any targets for recycling or recovery it may be difficult for producers to know what is expected from them.

UK

In the UK consultation paper, reuse is mentioned among the objectives and in the UK reuse seems to be a growing business for some product groups in particular in the computer industry. The targets of the directive are set for reuse/recycling and recovery but it is not certain that the UK has enough capacity in their recycling facilities to achieve these targets from the start.

By supporting a collective scheme, by for instance authorities, some local authorities and some parts of the industry may limit the reuse opportunities if the waste has low quality, although it may stimulate increased recycling if the scheme has a strong negotiation power.

A controlled collection method is important to guarantee high quality of the WEEE. With regard to collection through the local authorities, there may be a risk for low quality of the waste limiting the opportunities for reuse. Third party service providers may identify business opportunities in providing both recycling and reuse services depending on the customer demand.

The reluctance among retailers about in-store take-back may have a negative influence on reuse due to the missed opportunity to have a high control level at collection.

With an individual approach, the industry may find better solutions for collection to increase reuse opportunities. Individual producers with a strong buyer position on the market may also put pressure on the recycling industry to increase the recycling rates.

4.1.4 Reduced disposal

The lowest level of the waste hierarchy includes final disposal in incinerator or landfill. In order to reduce the amount of waste that goes to final disposal, measures are implemented to separately collect the WEEE. This section includes a discussion on how the different stakeholder approaches may contribute to achieving the objective of reduce disposal through collection of WEEE. Important factors for achieving the objective include for instance accessibility and availability of collection systems, public awareness and the extent to which it is feasible to have complementary collection systems.

Sweden

From the authority perspective, Naturvårdsverket supports the collective scheme established by the industry, since it is easier to administer and enforce the programme if it only has to deal with few actors. Too many solutions may have made it difficult for Naturvårdsverket to follow up on the results. A collective scheme seems to be effective for achieving high collection rates.

Among the third party service providers, the collection rates of El-Kretsen are considered to be high, although no collection target has been set. One explanation of the high collection rates may be that although the industry is only responsible for the WEEE collected according to the old-for-new rule in theory, the Elretur collaboration makes the industry responsible for all WEEE collected in the recycling centres, including the historical waste. This means that the members of El-Kretsen are taking a larger responsibility than they have to according to the legislation, and that they have to bear a higher cost compared to producers outside El-Kretsen. The members may also have to cover the costs for the WEEE that has been returned to the recycling centres even though it should be covered by producers with alternative solutions and for WEEE returned to recycling centres by businesses. As there is often little control of where the waste comes from at the recycling centres, these volumes are added to the collection of El-Kretsen and the producers are paying for more waste than should according to the ordinance. As the costs for the members have for some product groups reached higher levels than expected, some companies have left the collaboration and others are considering other alternatives, leading to lower collection rates within the programme.

Within the industry, the low collection rates of individual solutions, for instance the collection of Ikea, indicate that it could be difficult to achieve high overall rates with individual producer responsibility. In addition, for companies with individual collection seeking to reduce costs, there are limited incentives for improving the collection rates because the costs will increase as an effect of increased collection.

Individual approaches may contribute to increased collection rates even though it seems difficult to reach results similar to El-Kretsen. Depending on the effectiveness of individual collection systems, the local authorities risk becoming responsible for the waste that should have been collected by the producers according to the old-for-new rule but which has been returned to the recycling centres.

Combining different collection methods maybe based on a variety of solutions supported by for instance Euroenvironment and the waste treatment industry, may lead to increased collection. Producers combining their membership of El-Kretsen with other individual collection solutions may also have positive effects for the programme as a whole.

The local authorities seem to support the collaboration with El-Kretsen. The fact that some members of El-Kretsen have decided to leave the collaboration risks the responsibility of the historical waste to fall back to the local authorities. With a reduced number of members of El-Kretsen, there may not be enough incentives for the local authorities to collaborate with the industry, as they then may not be sure to get most of the costs for WEEE collection covered by the producers. Depending on what collection alternatives are available for the industry, this is likely to lead to reduced collection rates, at least compared to El-Kretsen. With an increasing number of individual solutions, the risk for freeriders may also increase.

UK

From the authorities' perspective, it may be too complex to administer the programme if obligations are put individually and therefore they support a collective scheme.

In the WEEE directive an important difference compared to the Swedish ordinance is that all historical waste collected from private households is covered by the producer responsibility. It may therefore be interesting for the industry to set up one or several collective schemes in collaboration with the local authorities to assure high collection rates.

A target of 4 kg per person per year from private households is set as a minimum level in the directive and the current collection rates are already exceeding this target. In order to further improve the collection rates, a possibility that has been discussed in the UK is to set a higher target in the national legislation. However, voices have been raised within the industry against higher targets, as this would increase the burden on the national industry.

Within the EEE industry a range of different collection methods are being discussed. A variety of complementary solutions may contribute to achieving high collection rates. There is a risk that retailers' reluctance to in-store take-back may limit the collection.

In the WEEE directive, a register for keeping track of companies, which need to comply with the legislation will be implemented in order to avoid freeriders. A financial guarantee will also be implemented. These measures may have the potential to contribute to increased collection rates, depending on how they will work in practice.

The local authorities have an important role for the collection of household waste and it seems difficult to see how to arrange collection of WEEE from households if the local authorities are not involved. DTI has said that much will be based on the current infrastructure. However, the local authorities emphasise that they do not want to have any obligatory involvement in WEEE collection but they are still open to be involved in the physical handling as long as the producers cover the costs. If the industry decides to solve its responsibility collectively and collaborate with the local authorities to assure high collection rates, it may contribute to achieving the objective. However, if it decides to go for individual solutions there is a risk where there is no separate collection through the local authorities, as the local authorities do not seem interested in administer many partners and arrange with sorting and storage. Depending on what alternative systems are available, this may lead to limited collection rates.

4.1.5 Improved environmental performance of involved operators

This section includes a discussion about how the different stakeholder approaches may contribute to achieving the objective of improving the environmental performance of involved operators, focusing in particular on the performance of recyclers. Important factors for achieving the objective include for instance negotiation power in the EEE industry and the feasibility for operators to make new investments.

Sweden

According to Naturvårdsverket, the specific regulations implemented for pre-treatment of WEEE seem to be working well in general contributing to achieving the objective.

Within the EEE industry, large producers with strong negotiation power may have the potential to put tougher requirements on the recycling processes through individual agreements with recyclers compared to what is stated in the legislation.

El-Kretsen may also contribute to the objective through increasing pressure on the recyclers. However, the dominant position of El-Kretsen constitutes a barrier for the recyclers to make long-term investments in new technologies and facilities. The short-term contracts with El-Kretsen could therefore lead to the low innovation level in recycling industry limiting the development of the industry.

Specialised solutions supported by for instance Euroenvironment and other parts of the waste treatment industry may contribute to increasing the environmental improvements for recyclers.

UK

In the UK, very little WEEE is treated at present, but the future legislation will require that licensed treatment facilities are available. However, the authorities might have to adjust the requirements on the facilities to ensure that the UK has enough capacity to manage all collected WEEE, leading to lower environmental performance in the facilities.

Within the waste treatment industry there may be opportunities to improve recycling through investments in more environmental technology. There is a risk that a situation where the recyclers are dependent on one single or a few contracts may be limiting the ability to make investments. Therefore, individual agreements seem to be better for improving the environmental performance of the recyclers.

4.2 Summary of the evaluation

Below is a summary of the evaluation of how the different stakeholder approaches may contribute to achieving the environmental objectives of the EPR programmes.

Sweden

An overview of the evaluation of the programme implementation in Sweden is presented in Table 4.

Objective	Current situation	Potential
Prevention and eco-design	<ul style="list-style-type: none"> ▪ Limited focus in existing programme 	<ul style="list-style-type: none"> ▪ Increasing interest for alternative solutions including individual responsibility ▪ Controlled waste collection
Reuse, recycling, recovery	<ul style="list-style-type: none"> ▪ Larger focus on recycling ▪ Limited opportunities for reuse when waste is collected through local authorities 	<ul style="list-style-type: none"> ▪ Increased reuse through control of collected waste
Disposal	<ul style="list-style-type: none"> ▪ High collection rates through collection by authorities ▪ Lack of incentives for achieving high collection rates through individual solutions 	<ul style="list-style-type: none"> ▪ Combinations of a variety of different collection methods
Involved operators	<ul style="list-style-type: none"> ▪ El-Kretsen may put pressure on recyclers to improve their performance 	<ul style="list-style-type: none"> ▪ Large producers may individually put pressure on recyclers ▪ Individual agreements may support development within recycling industry

Table 4 An overview of the evaluation of the programme implementation in Sweden

There seem to be limited focus on contribution to waste prevention and stimulation of eco-design in the existing system, dominated by the collective scheme. The increasing interest for alternative solutions including individual responsibility, may however lead to better opportunities for preventative measures.

The large focus in the current system seems to be on recycling. There is a potential for a larger focus on reuse of equipment but the current opportunities are limited due to the collection system of the local authorities.

Reduction of disposal seems to be working well as the collection system of El-Kretsen covers all WEEE, leading to high collection rates. The local authorities seem to have a key role to assure high collection rates. However, with an increased cost for producers in the collective system compared to individual solutions, some producers have left the El-Kretsen collaboration. Combinations of a variety of different collection methods may have the potential to contribute to increase overall collection rates but there is also a risk that an increased level of individual solutions may lead to lower collection rates.

El-Kretsen may put pressure on involved operators to improve their environmental performance in their facilities but the dependency of many recyclers on El-Kretsen may limit their capacity to make necessary investments to achieve this objective.

UK

An overview of the evaluation of the programme implementation in the UK is presented in Table 5.

Objective	Potential
Prevention and eco-design	<ul style="list-style-type: none"> ▪ Individual responsibility in the WEEE directive ▪ Opportunity for ideas of how to organise individual responsibility in practice
Reuse, recycling, recovery	<ul style="list-style-type: none"> ▪ High priority due to targets ▪ Easier to reuse through control of collected waste
Disposal	<ul style="list-style-type: none"> ▪ Main focus on collective schemes to assure high collection rates ▪ Involvement of local authorities is key
Involved operators	<ul style="list-style-type: none"> ▪ Individual agreements may stimulate development within the recycling industry

Table 5 An overview of the evaluation of the programme implementation in the UK

Since the details of the UK implementation not have been settled yet, there are still opportunities for stakeholders to consider approaches for how to best meet the environmental objectives.

The individual responsibility supported by the WEEE directive, may give opportunities for prevention and stimulation of eco-design. Even though it is still unknown how this will be organised in practice, there is an opportunity for producers to at least think of and discuss ideas and solutions of individual responsibility.

Reuse, recycling and recovery all seem to be important in the UK. It may be easier to support reuse with individual solutions depending on the control level of the collection methods. Targets are set for recycling and recover but it may be difficult to meet those targets due to limited recycling capacity.

The main focus seems to be on setting up collective schemes, in order to assure high collection rates. The involvement of the local authorities seems to be key for achieving this objective.

There is a risk that the environmental requirements on involved operators may be lowered due to limited recycling capacity. Individual agreements with the producers may better stimulate innovation instead of becoming dependent on one single scheme.

5. Conclusions

This chapter includes a final discussion on the environmental effectiveness analysis of the studied programmes. Some recommendations are described to improve the environmental effectiveness and some areas for further research are also suggested.

5.1 Meeting the environmental objectives

In both Sweden and the UK, it seems difficult to meet the objective of prevention and stimulation of eco-design, and the objective seems also to be missing in the overall discussion of the implementation of the two EPR programmes. Although the individual responsibility concept is included in the WEEE directive, it is still uncertain how this type of responsibility may be implemented and whether the actual implementation will incorporate any incentives for preventative measures. There are some elements included in the directive, such as marking of new products and financial guarantees that have the potential to contribute to increased prevention.

The main focus in the two countries seems to be directed to the middle levels of the waste management hierarchy, especially to increase recycling and reduce disposal. In the UK, there may however be a risk that there is lack of recycling capacity and discussions also include reuse to some extent. The objective of improving the environmental performance of involved operators seems to be in focus in both countries.

There may be many reasons why it seems difficult to achieve the prevention objective. One explanation could be related to the focus on the historical waste issue, which is an important challenge for the industry. In some years, when the historical waste is being phased out and future waste will become dominant, there may be a transfer of focus to more long-term preventative measures including eco-design.

The results may also indicate that the potential of EPR to stimulate preventative measures minimising the waste generation at source may be limited and that the main focus is instead on trying to manage the existing waste in a way that is the best for the environment, taking the industry's interests into account. What if EPR programmes turn out to have limited potential to stimulate eco-design in practice? Complementary regulation might be a solution for supporting product changes, for instance the development of other EU directives including the ROHS directive, with focus on restriction of hazardous substances and the EuP directive⁴¹, focusing on regulating eco-design for *Energy-using Products (EuP)* (European Commission, 2003b). This may indicate that it is difficult to implement regulation for both prevention and the lower levels of the waste hierarchy simultaneously and that it may be preferable to separate the requirements.

5.2 Potentials for improved environmental effectiveness

There may be several options how stakeholders may contribute to improve the environmental effectiveness of the EPR programmes. The largest potential for the

⁴¹ The Proposal for a Directive of the European Parliament and of the Council on establishing a framework for the setting of Eco-design requirements for Energy-Using Products and amending Council Directive 92/42/EEC is available on http://europa.eu.int/eur-lex/en/com/pdf/2003/com2003_0453en01.pdf [September 13, 2003].

programmes to prevent waste generation may be within design changes, which could be stimulated through individual responsibility. Schemes based on individual responsibility may have the potential to contribute to meeting the objective of prevention and eco-design. Reuse may also constitute an area that could be further prioritised.

In the Swedish case, a greater governmental support for complementary solutions may contribute to increased collection rates. With an increased support for alternative solutions, producers may be more interested in investigating individual solutions that could serve as complement to El-Kretsen, increasing the collection rates even further. More involvement of the authorities, as a support guiding the industry may lead to that more producers are proactive in taking their responsibility.

The local authorities play a key role and more or less seem to be obliged to be involved in collection in one way to another to assure that a certain collection level is achieved. However, a combination of different collection methods may contribute to higher collection rates. A successful collection system could be based on a wide range of different methods to assure that as much WEEE as possible is collected including retailer in-store take-back, different methods provided by the local authorities, third party collection services, etc.

An increased interest for a variety of methods may stimulate the industry's exploration of different types of schemes. With a combination of solutions supporting both collective and individual responsibility, producers may benefit from different types of schemes simultaneously and also contribute to achieving the objectives at the different levels of the waste management hierarchy, for instance increase collection rates.

With more focus on preventative measures, it may become more interesting for the industry to explore solutions based on some kind of individual responsibility. In order to increase prevention and reuse, the government could maybe implement targets for these measures. As there is a strong focus on the costs within the industry, effective incentives for prevention may be designed so as to drive costs, for instance with a connection between the cost for end-of-life management and the environmental aspects in product design.

A programme mainly based on one single collective scheme, has the potential of assuring high collection rates if it collaborates with the local authorities. However, consequences may include that there are limited incentives for preventative measures and eco-design. Individual schemes may have a greater potential for providing incentives stimulating prevention and eco-design, but risk low collection rates.

A possible scenario for achieving high collection rates within a programme could be that a basic collective collection system, which is run by the local authorities and financed by the producers, to assure collection of waste from private households. This basic system could be complemented with additional solutions including individual initiatives and maybe also other collectively supported solutions.

5.3 Areas of further research

In this study the environmental objectives were used to evaluate the environmental effectiveness of the programmes. It may also be interesting to look further into other criteria especially economic efficiency as costs seem to be in many stakeholders' focus. Whether it is possible to do such an evaluation may depend on to what extent data is available. An

appropriate subject for economic efficiency evaluation may therefore be a programme that has been in operation for some years.

This study covers the implementation in two EU countries. With the directive and increased policy implementation it may be interesting to look at the process in other existing EU countries. Another interesting perspective may be to investigate how the implementation of EPR policies in existing member countries may differ from implementations in future member countries.

As there are often differences between how the implementation should be in theory and what it really turns out to be in practice. Further investigation could help to increase the understanding about their actual implementation, how they are working in practice and what economic and environmental effects may be expected from such a programme.

With regard to collective and individual producer responsibility, there is a need to further investigate the concepts and how they may be expressed in practice through different types of EPR schemes. Case studies of different combinations of EPR solutions, collective and individual schemes, and what effects they could have may also be interesting to look further into.

5.4 Final comments

During the work of this thesis, the following reflections occurred to the author.

Due to uncertainties about the future legislation it is difficult to know how the programmes and compliance schemes will develop both on short and long term. In the UK, the legislation is not yet implemented. The WEEE directive has a central role in the future programmes but there are many uncertainties about how this will be implemented in practice and many different interpretations of the content. Different interpretations of the concepts of collective and individual producer responsibility among stakeholders may also influence the uncertainty level of the findings.

The general impression among stakeholders seems to be that the EPR principle is something that is important for the environment. There also seems to be hope that the WEEE directive, maybe not on a short term but more in the longer run, may contribute to that we will see a decreased level of waste generation in the future. However, as has been discussed above, the current implementations may not include the best solutions for achieving the environmental objectives set for Sweden and the UK.

The implementation of EPR programmes seem to be a complex process with many actors involved. During the study, it has therefore sometimes been difficult to create an overview of how the different elements of the systems relate to each other. In addition there are many different interpretations of both the EU directive and the Swedish ordinance that have lead to difficulties when analysing the approaches.

Overall, EPR programmes seem to be quite complex and the surrounding picture is not always clear. Another lesson learnt is that there are also differences between what is required in the legislation and how the producer responsibility is carried out in practice for instance in the Swedish system, producers have obligations according to the old-for-new rule while they voluntarily set up a system where they have to pay for all historical waste. With this in mind,

we may expect to see some variations also regarding the implementation of the WEEE directive.

I am convinced that EPR programmes will be important for improving waste management in EU in the future. It has been an exciting and interesting journey during the work with this study, which has provided me with a lot of valuable experience. My hope is that we will see more research in this area and that this report can contribute with the environmental perspective to the ongoing and future discussions about implementation.

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Abbreviations

BRC	British Retail Consortium
DTI	Department of Trade and Industry
EA	Environment Agency
EEE	Electrical and Electronic Equipment
EPA	Environmental Protection Agency
EPR	Extended Producer Responsibility
ERP	European Recycling Platform
EuP	Energy-using Products
ICER	Industry Council for Electronic Equipment Recycling
ICT	Information and Communication Technology
IT	Information Technology
LARAC	Local Authority Recycling Advisory Committee
LGA	Local Government Association
MTB	MobilTeleBranschen
ROHS	Restriction of the use of certain hazardous substances in electrical and electronic equipment
RSS	Renhållningsförvaltningen Stockholms Stad
RVF	Renhållningsverksföreningen (the Swedish association of waste management)
UK CEED	UK Centre for Economic and Environmental Development
WEEE	Waste from Electrical and Electronic Equipment
ÅI	Återvinningsindustrierna

Appendices

6.2.1 Appendix 1 – Outline of interview questions

Below are presented a number of typical questions asked during the interviews. The questionnaire has been further developed and customised to suit each interview.

Introduction

- Tell me about your organisation.
- What role and responsibilities does your organisation have related to the implementation of the producer responsibility for WEEE?

Today's situation

- What is your organisation's opinion about the current situation?
- What do you appreciate and what do you think could be improved?
- How do you think the situation could be improved?
- What is your opinion regarding collective and individual producer responsibility? Why?
- What issues are in focus for discussions in which your organisation participates?
- What issues are most important for you? Why?

Future

- What do you think are the major opportunities and challenges for your organisation regarding the implementation?
- How do you think the programme will develop on short term, in 5 years? On long term, in 10 years or more?
- What do you think about the future for different solutions based on collective and individual producer responsibility?